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Foreign Agriculture

.....a Review of Foreign Farm Policy, Production, and Trade

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CONTENTS

Page

INTER-AMERICAN AGRICULTURAL COOPERATION 275
- Rise of the program of cooperation 276
- Agriculture's role in the cooperative program 276
- Commodity collaboration in the Western Hemisphere 277
- Cooperation in production of complementary products 279
- Recent work undertaken 285
- Proposed Institute of Tropical Agriculture 286

TOBACCO IN PRINCIPAL PRODUCING COUNTRIES OF THE FAR EAST 287
- Leaf production 287
- Types of tobacco 288
  - Flue-cured type 289
  - Light and medium-light types 291
  - Dark types, including cigar types 292
- Imports and exports 293
  - Imports 294
  - Exports 295
- Manufacture and consumption 295
  - Products other than cigarettes 296
  - Cigarettes 296
- Probable developments affecting American tobacco 299

DENMARK'S AGRICULTURE AS AFFECTED BY WAR 301
- The people and the land 303
- Character of Danish agriculture 304
  - Farm ownership and land utilization 304
  - Shift from grain to livestock production 306
  - Principal crops 307
  - Importance of livestock 309
- Foreign trade 313
  - Exports 314
  - Imports 315
  - Trade with the United States 316
- Effect of war on production and exports 317
  - Feed supplies 318
  - Livestock production 320
  - Future production dependent upon German policy 324
- Conclusions 325

RECENT DEVELOPMENTS IN FOREIGN AGRICULTURAL POLICY 327
- Sicilian Colonization 327
  - The latifundia 327
  - Extent of latifundia 328
  - Management of estates 328
  - Execution of project 329
- France establishes a Ministry of Supplies 329

INTER-AMERICAN AGRICULTURAL COOPERATION . . . . .

By Henry A. Wallace*

The need of effecting closer economic, political, and cultural ties between the Americas has been recognized in recent years as never before. Among the articles and speeches by Secretary Wallace dealing with this timely subject, the following, which appeared in English and Spanish in the fiftieth anniversary issue of the Bulletin of the Pan American Union, *is believed to be of interest to readers of* Foreign Agriculture. *It describes the agricultural phases of the program under way to improve inter-American relations.*

On this fiftieth anniversary of the Pan American Union, it is fitting to discuss one vitally important phase of cooperation between the Americas - cooperation in the agricultural field. The Pan American Union has been a pioneer in effecting closer inter-American ties of every nature. In this work, its Division of Agricultural Cooperation, whose working relationships with the United States Department of Agriculture are so friendly and cooperative, has played a significant role.

The trend of world history highlights the urgency of cementing ties between the Republics of the Western Hemisphere. Our ties in the past, and those of our Latin American neighbors, have been with Europe. Bonds of trade and bonds of culture have kept our interest centered across the Atlantic. Now, with several of the powers of Europe at war, we gaze at the terrible scene, and realize how fortunate we are in the western world.

But the outbreak of hostilities in Europe has created difficult situations which confront all of the American Republics. More than ever, our cooperation should be wholehearted and effective.

This does not imply that we were not conscious of the need of effecting closer ties with Latin America prior to the outbreak of the current European conflict. The fact is that the good-neighbor policy and a considerable part of the machinery necessary to put it into force has been in existence for some years. President Roosevelt undoubtedly was thinking of our Latin American relations, as well as our relations with the rest of the world, when, on January 2, 1940, in his address to Congress on the state of the Union, he declared: "In these recent years we have had a clean record of peace and good will. It is an open book that cannot be twisted or defamed. It is a record that must be continued and enlarged."

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* Secretary of Agriculture.

RISE OF THE PROGRAM OF COOPERATION

In initiating this work and in carrying it forward, not only the President but the Members of Congress, his Cabinet, and nearly all the departments and agencies of the Federal Government, have played a part. At the request of President Roosevelt, there was established in May 1938, an Interdepartmental Committee to examine the subject of cooperation with the other American Republics, and to draft a concrete program designed to render closer and more effective the relationship between the Government and the people of the United States and our neighbors in the 20 Republics to the South.

The work of the Interdepartmental Committee was undertaken in the conviction that the peoples of the New World, within the sphere of their separate and independent entities, are one in their belief in the efficacy of practical day-to-day economic collaboration. There is ample reason to believe that this feeling is being shared to an increasing extent by citizens in all the American Republics. With the crystallization of this sentiment there will develop, to an even greater extent than at present, a lasting reciprocal cooperation yielding economic benefits to all nations concerned, a concrete demonstration of friendship in a peaceful American world.

AGRICULTURE'S ROLE IN THE COOPERATIVE PROGRAM

Because agriculture plays such a vital role in the economies of all the countries of the Western Hemisphere, especially those of Latin America, the field of action in connection with inter-American agricultural cooperation is of unique interest. This action must necessarily be undertaken with regard for the agricultural resources of the Americas, particular attention being paid to the major crops that are now being produced and those whose production might advantageously be developed or expanded.

It is well known, for instance, that 4 of the 20 Latin American nations (Argentina, Uruguay, Chile, and Paraguay) and the United States lie wholly or mainly within the Temperate Zone, while 16 countries are for the most part tropical or semitropical. Yet a considerable part of the agricultural production of Latin America consists of Temperate Zone products and these enter to an important extent into the foreign trade of a number of Latin American nations.

For instance, agricultural imports into the United States from Latin America, which have made up as much as 90 percent of our total imports from that region, are to the extent of 50 percent made up of supplementary products, or commodities the like of which are produced in this country. The relatively large share of Temperate Zone products that enter into the Latin American exports to the United States is accounted for by the fact that large parts of the tropical or semitropical areas like the vast Amazon Basin in Brazil and large areas in southern Venezuela, southwestern Colombia, eastern Ecuador, Peru, and Bolivia are regions still largely uncultivated. This would seem to suggest the advisability of exploring the possibilities of greater agricultural production in Latin America along tropical and semitropical lines, particularly for products that have a market in the United States.

Upon the foregoing fundamental considerations have been based to a large extent most of the activities concerned with inter-American agricultural cooperation. On the one hand, we are seeking greater collaboration on the part of all the American Republics with respect to the marketing and production of those commodities concerning which there is a hemisphere surplus. On the other hand, in cooperation with the countries of Latin America, efforts are under way to develop and expand their production of tropical and semitropical commodities that, as complementary products, may find a market in the United States and thus enhance the purchasing power of the countries of origin for the products of Temperate Zone countries. The work that is being done along these and other subordinate lines of agricultural cooperation should be discussed at this point.

COMMODITY COLLABORATION IN THE WESTERN HEMISPHERE

The first line of action mentioned above seeks to bring about more orderly production and marketing in the Americas of those commodities that Latin America and the United States produce in excess of present and probable future requirements of the Western Hemisphere. This problem has been tackled on a world-wide basis with respect to a number of important commodities of international commerce, notably tin, rubber, and sugar. Considerable progress had been made up to the outbreak of European hostilities in the direction of an international agreement on wheat. Early in September 1939 a meeting was held in Washington, attended by representatives of the United States and nine other countries (of which three - Brazil, Mexico, and Peru - were Latin American countries), to consider the possibility of working out an international arrangement with respect to the production and marketing of cotton.

Figure 1.-A WHEAT FARM IN WASHINGTON. Both North and South Temperate Zones have vast regions where wheat flourishes. Argentina and the United States together produce more than a billion bushels of wheat a year, over 200 million bushels more than the amount needed for their domestic requirements.

The possibility of collaboration

on a commodity basis within the Western Hemisphere, at least during the period of the current European War, is being actively explored. Such collaboration would contemplate at the minimum no further expansion of production of those items for which world supplies, especially in Western Hemisphere countries, are in excess of world requirements when considered on either a peacetime or a wartime basis.

At this point I wish to review briefly the situation as it relates especially to Western Hemisphere countries, of several of the more important items of world trade - cotton, wheat, and sugar.

World production of cotton has been increasing in recent years in spite of the restrictions on production in the United States, and at the same time international trade in cotton, as reflected in the imports of the deficit countries, has declined. Furthermore, there was a carry-over of American cotton at the beginning of the current 1939-40 season of about 14 million bales of cotton, a quantity about equivalent to a normal cotton crop in the United States. The combined annual output of the cotton-producing countries of the Western Hemisphere in recent years has averaged about 15 million bales. This quantity exceeds domestic requirements of the United States and Latin America by as much as 6 or 7 million bales.

In the case of wheat the general picture is that before the war importing countries were taking about 550 million bushels of wheat annually, while exporting countries were producing between 750 and 900 million bushels to fill those requirements. If the war continues for some time there may be some expansion in export trade resulting from decreased production in Europe. But there is little prospect for this expansion to be sufficient even to catch up with current export supplies.

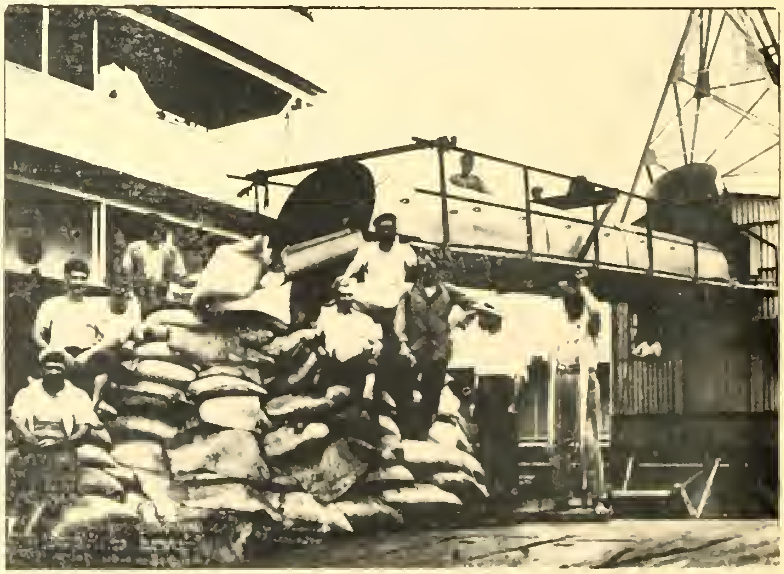

Figure 2.-LOADING COFFEE AT SANTOS WITH MECHANICAL CONVEYORS. Santos is the leading coffee port in the world, shipping annually about 10 million bags of coffee, a product for which the United States must rely entirely on imports.

The United States and Argentina are by far the most important wheat producers in the Pan American group. In addition, within the Western Hemisphere, there is Canada, which is the most important wheat-exporting country in the world. The United States and Argentina together produce more than a billion bushels of wheat per year and need less than 800 million bushels for domestic requirements. Generally speaking, other Latin American countries are deficit wheat producers, but altogether they absorb only a little more than 50 million bushels a year. This means that at a minimum there are 150 million bushels (usually it is much more) of wheat being produced in the United States and Argentina in excess of requirements within the Pan American group.

Sugar and coffee also afford examples of staple items of commerce that are being produced in the Western Hemisphere far in excess of Western Hemisphere requirements. In the case of sugar, there is in existence an international agreement, which is designed to bring about a balance between world export supplies and world import requirements. Up to the present time no progress has apparently been made with respect to coffee, although the principal producer, Brazil, has been struggling for many years with the problem of surplus production.

The foregoing are simply examples of major commodities produced within the Western Hemisphere in surplus amounts. Every effort is being made to develop cooperative production and marketing policies with respect to these and perhaps other major commodities in the Western Hemisphere.

COOPERATION IN PRODUCTION OF COMPLEMENTARY PRODUCTS

Another very significant phase of the work of inter-American agricultural cooperation aims to give Latin American countries greater purchasing power, not by means of loans, but by the development of a wider basis of complementary trade

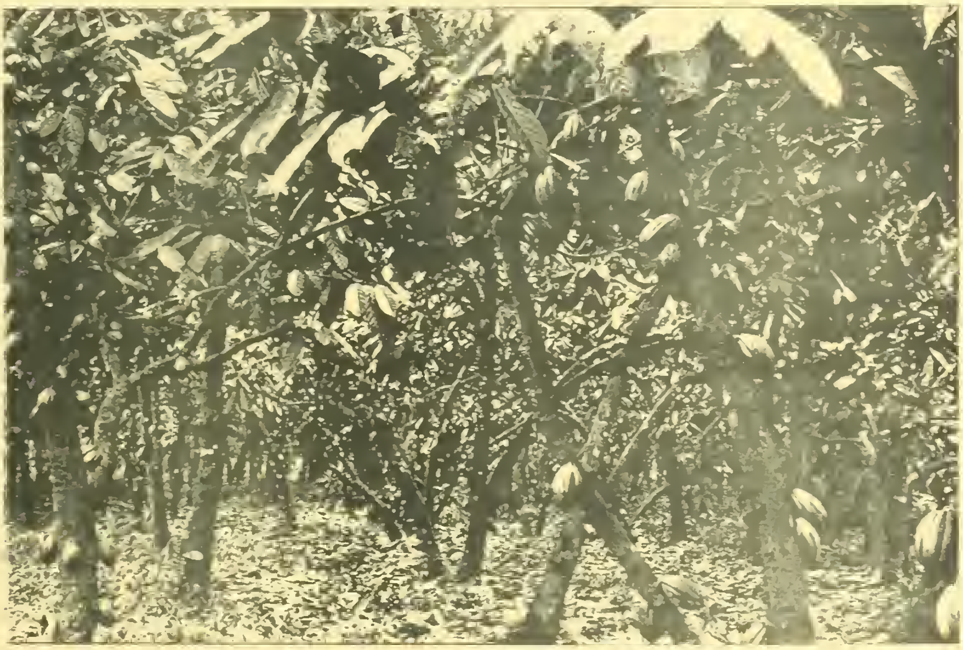

Figure 3.- A CACAO PLANTATION. Cacao, a tree native to the Americas, is grown in warm climates. Each pod seen in the picture contains a number of beans, which are ground and otherwise treated to make chocolate or cocoa. The United States, a large consumer of chocolate, obtains more than 40 percent of its imports from Latin America, especially Brazil.

between those countries and the United States. The nature of our trade with Latin America clearly indicates that this is necessary if there is to be any substantial and permanent increase in this trade.

In 1938, for example, our exports to Latin America had a value of approximately 400 million dollars. A little more than one-tenth consisted of agricultural commodities and about nine-tenths was made up of nonagricultural products. In contrast, our imports from Latin America in the same year, valued roughly at 448 million dollars, were about four-fifths agricultural and one-fifth nonagricultural. Of the agricultural imports, almost half consisted of supplementary goods, that is, those which are the same as, or readily substituted for, the products of United States agriculture. Among the principal complementary items are coffee, bananas, cocoa, and certain fibers, the most important of which are henequen and coarse wool. The supplementary items include sugar, vegetable oils and oil seeds, meat and meat products, molasses, and unmanufactured tobacco. It might be added that in the respects noted the situation in 1938 is somewhat typical of that of recent years.

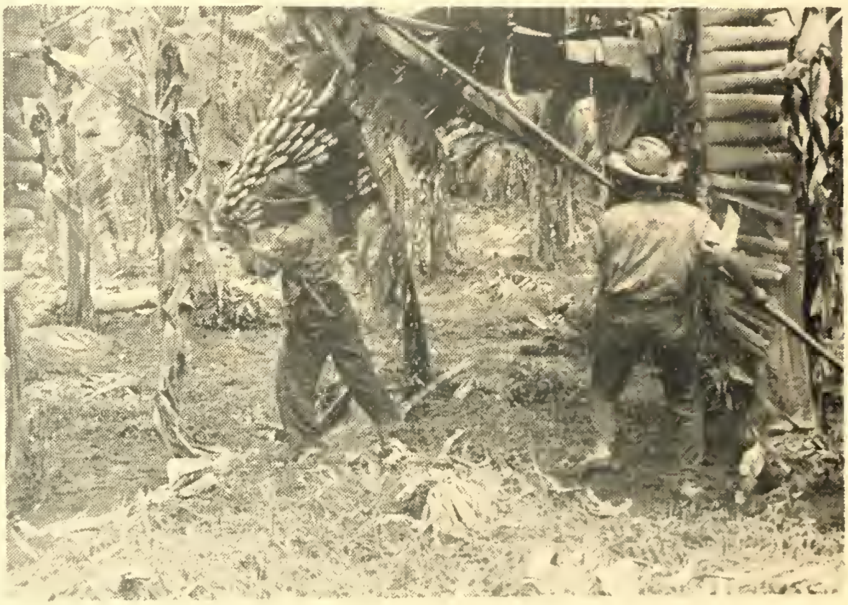

Figure 4.-CUTTING A BUNCH OF BANANAS. Large amounts of United States capital are invested in the banana industry in the countries bordering the Caribbean. Bananas, an agricultural product complementary to crops grown in this country, were imported in 1939 to the value of $29,082,667. (Courtesy of Herbert C. Lanks.)

While supplementary agricultural products have composed more than 50 percent of the total agricultural imports from Latin America in recent years, it would not be wise to count upon greatly increased imports of such products as a basis for greater purchasing power for American products in Latin America. The reason for this is that, for the most part, United States production of such products has by no means reached its full potentiality and is more likely to expand than to contract. This applies in particular to such commodities as flaxseed and other vegetable oil materials, fruits and vegetables, and grains. Furthermore, the loss of foreign markets for certain of our staple export crops is likely to give impetus to increased production of those kinds of products that are now imported. Cane sugar alone accounts for between 40 and 50 percent of the value of supplementary agricultural imports from Latin America.

There may be an opportunity to increase imports of certain other supplementary products such as, for instance, cattle hides and the less competitive types of wool. But such increases will probably not bulk large in our total import trade with Latin America. It is safe to conclude, therefore, that, with regard to supplementary agricultural products, there is no basis for anticipating any great expansion in imports in the years immediately ahead. Naturally, imports of such products will be larger in periods of favorable business conditions in the United States than in periods when business activity is at a low level. But, upon the whole, it does not seem likely that imports of such supplementary products will achieve the level reached in the period 1936 to 1938 within the next few years, unless there are crop disasters in the United States comparable to those of the droughts of 1934 and 1936.

Figure 5. - A PRIZE-WINNING URUGUAYAN SHEEP. Wool is a valuable export commodity from Uruguay and Argentina.

Turning next to the complementary agricultural products, it will be noted first of all that they are without exception now free of duty in the United States. There is, therefore, nothing that can be done by the United States to improve their terms of entry. In fact, practically all of these products have now been bound on the free list in trade agreements with one or the other of the Latin American republics. With free entry into the United States market assured for some time to come, what are the prospects of larger imports into this country from Latin America in volume or value in the next few years?

Coffee is much the most important of the complementary products imported from Latin America. In this particular case there is not likely to be any substantial increase in the volume or value of coffee imports. In the first place, the demand for coffee in the United States is relatively inelastic. Secondly, since there is a heavy surplus of coffee in Latin American countries as a whole, the value of coffee imports into the United States would probably not rise greatly even if larger quantities were imported. It is of interest to note that there was no substantial change in the value of coffee imports from Latin America during the entire period from 1932 to 1938.

On the other hand, imports of some of the other complementary products, such as bananas, cocoa, coarse wool, and spices, seem to be quite sensitive to economic conditions in the United States. In other words, the value of the imports of those products is closely associated with the level of economic conditions in this country.

For the most part the principal complementary agricultural products imported from Latin America are not imported in substantial amounts from other parts of the world. For this reason it is not possible for important shifts to take place in the production of a higher percentage of imports of the major complementary items from non-American countries to Latin America.

It appears that any very considerable and permanent increase in the trade between the United States and Latin America must await the production in Latin American countries of new complementary products to serve as a means of widening the basis upon which to increase sales from Latin America to the United States. What are some of these new products, the production of which might be developed in Latin America for sale to the United States, and what are the possibilities for their production in the Western Hemisphere?

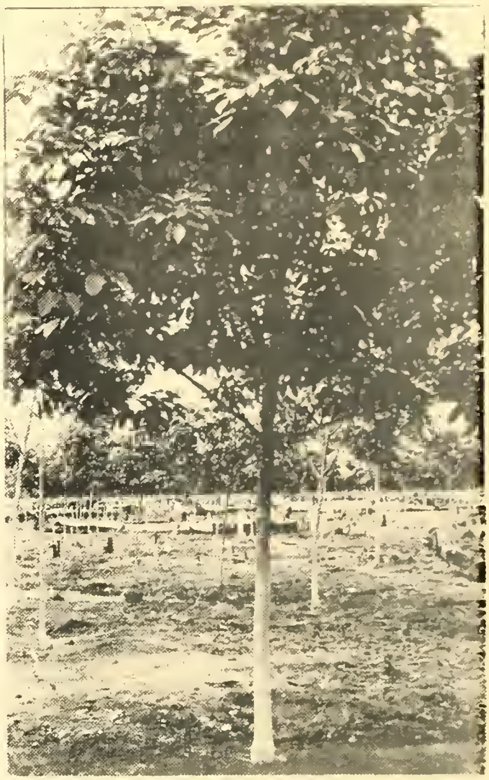

Figure 6.-YOUNG RUBBER TREES IN BRAZIL. The Ford Motor Company has about 14,000 acres of rubber in production on its Brazilian plantations. It will be noted that these trees have been budded; this is done in order to utilize the high yielding strains of rubber, which enable America to compete with the low labor costs of the Far East.

Foremost of these is rubber. The Netherland and British East Indies furnish over 90 percent of the world's rubber supply. The United States' purchases have amounted to as much as 80 percent of the world's production in certain years and imports of rubber into this country from the East Indies alone amount to nearly a billion pounds a year, valued at nearly 250 million dollars. Imports of rubber from Latin American sources are negligible in spite of the fact that the rubber tree, *Hevea brasiliensis*, is a native of tropical America and is the original source of the world's cultivated rubber.

If the proper cooperative effort were made, it probably would be possible to expand substantially the production of rubber in Latin America to a point where it could compete on even terms with rubber from the East Indies. There are high-yielding strains of rubber now in existence in Latin America, which can offset the labor advantages of the Far East, particularly because the latter is greatly handicapped by an industry built up on low-yielding strains. It also appears that there are disease-resisting strains that would not be subject to the South American leaf-spot disease, which is the principal physical handicap to rubber production in the American tropics.

Two United States firms are at present producing rubber in Latin America. The Ford Motor Company began in 1928 in Brazil to explore rubber-growing possibilities. Now this company has about 14,000 acres of rubber in production. Later the Goodyear Rubber Company, in both Costa Rica and Panama, began investigating rubber possibilities on a small scale. It has about 2,000 acres in production. These plantings are merely indications of what might be done, for to supply our needs of rubber would require possibly 2,000,000 acres.

Abacá is another plant of tropical agriculture that might be developed to advantage in Latin America. The production of abacá, which supplies the manila hemp of commerce, the raw material necessary for naval cordage for which no satisfactory substitute is known, is now in the hands of Japanese growers in the Philippine Islands. Approximately 75,000 acres of land would be utilized in meeting our domestic requirements for manila hemp. There is every reason to believe, on the basis of a 2,000-acre planting in Panama, that abacá could be produced satisfactorily in the American tropics. Such an industry located within reasonable reach of the United States would be a decided asset in case of war.

Figure 7.-Cattle farm in Guanacaste, Costa Rica.
(Courtesy of National Tourist Board.)

Then there is the cinchona plant, which is the source of quinine. The United States now depends for quinine supplies on the tropical East Indies. Quinine must be available for health purposes, particularly in the case of war. It should be noted also that there is need for a large available supply of quinine at low prices for the poor people in the tropics. The cinchona plant, which yields the quinine, is a native of South America, and it is quite probable that with the necessary cooperation and research a profitable industry for producing quinine can be developed in this hemisphere.

To the foregoing list may be added other agricultural plants, such as those yielding tropical vegetable oils, drugs, perfumes, and flavoring extracts; herbs; tea; and a number of tropical fruits. In addition, tropical America is rich in many kinds of hard woods. United States supplies of high-grade virgin hard woods will apparently be exhausted before the needed quantity of high-grade second-growth becomes available. Here again it is desirable that the potentialities of tropical Latin America be explored. It may be that supplementary supplies of hard woods from this area can be obtained to bridge the gap between the time when existing supplies of virgin domestic hard woods are exhausted and the time when the needed quantities of second-growth material become available.

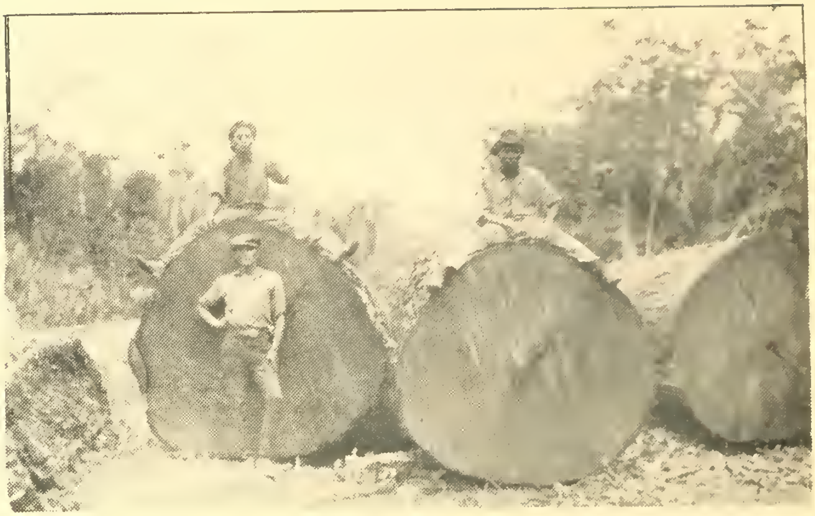

Figure 8.-CENTRAL AMERICAN MAHOGANY. Latin America is rich in many kinds of hard woods. (Courtesy of Legation of Honduras, Washington, D. C.)

Thus, there appear to be in the American tropics the physical resources for the production of complementary agricultural products on an extensive commercial scale. These resources, however, will not be developed beyond the present scale unless positive effective assistance is given by the United States and the countries involved. For one thing, the expansion in such production is in most cases a long-term undertaking, requiring in the case of rubber, for example, from 5 to 7 years for commercial production. Secondly, there has been relatively little scientific research looking toward the development of these resources comparable to that which has taken place, for instance, in the British and Netherland possessions in the East Indies.

If, therefore, the productive resources of the American tropics are to be effectively developed so as to result in a material increase in inter-American trade and improved relations between the Americas, the active interest and cooperation of the Governments of the United States and Latin America is the first essential. Cooperatively the Governments can provide the greater share of the initial technical and scientific skill.

In this connection a review of what is already being done by the United States Department of Agriculture and a number of Latin American Governments should be of interest. During the past year it has been possible for the United States Department of Agriculture to comply with requests received from Haiti, Ecuador, Paraguay, and Colombia for the services of agricultural experts to look into the possibilities of developing new complementary crops.

RECENT WORK UNDERTAKEN

Atherton Lee, director of the Puerto Rice Experiment Station of the Department of Agriculture at Mayagüez, was appointed as agricultural adviser to the Government of Haiti in August 1938 and spent a large part of the following 15 months in that Republic. His work had the assistance of the well-developed Service Technique, the agricultural experiment organization of the Government of Haiti, and resulted in a series of practical recommendations, which included the introduction of new crops, the further development of banana production, reforestation, and conservation. Recently Thomas A. Fennell has been assigned as full-time agricultural adviser to carry on the work inaugurated by Mr. Lee.

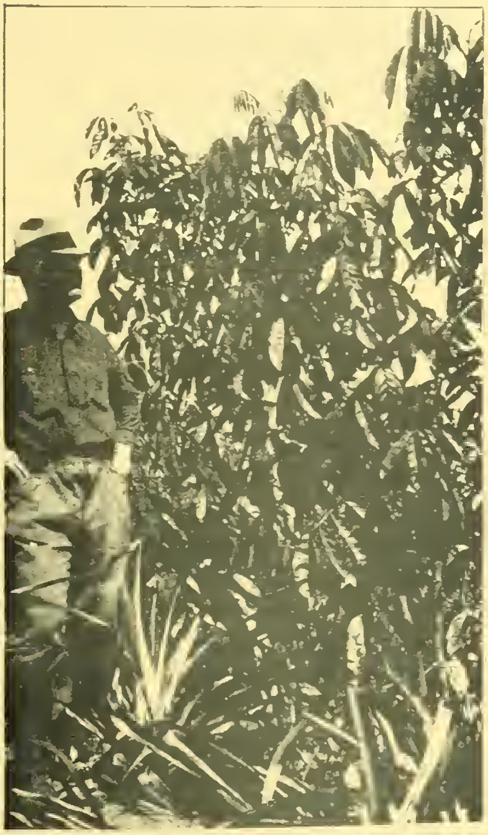

Figure 9.-BARBASCO OR CUBE. This plant, which is native to the Amazon Basin, is a source of rotenone, a valuable insecticide. (Courtesy of E. P. Killip.)

Following the signing of the reciprocal trade agreement with Ecuador in August 1938, a request was received from the Ecuadorean Government for a survey of the agricultural economy of the country. Charles L. Luedtke, acting agricultural attaché at Buenos Aires, made an extensive survey of Ecuador about a year ago. His report has been completed following consultation with scientists of the Department of Agriculture, and has been submitted to the Ecuadorean Government. In November 1939, Mr. Lee and Mr. Luedtke completed an additional agricultural survey at the request of the Ecuadorean Government.

In February 1939, Dr. E. N. Bressman, scientific adviser to the Secretary of Agriculture, and Paul O. Nyhus, agricultural attaché at Buenos Aires, made an agricultural survey of Paraguay, following which an extensive report was submitted to the Paraguayan Government. With respect to the export market, the report indicated some of the limitations on the further production of cotton, sugar, and tobacco, and the commercial possibilities of starch-producing plants, such as mandioca, were cited. The report likewise covered the question of agricultural transportation facilities, conservation of soil and forestry resources, and methods of training agriculturalists. The survey was made at the instance of the then Minister of Paraguay to Washington, who has since been inaugurated President of Paraguay.

As a result of a visit by Dr. Bressman to Colombia in March 1939, there has been an increased interest on the part of the Colombian

Government in the development of tropical agricultural products, particularly those that might enter into complementary and noncompetitive trade with the United States. The Colombian Government recently requested additional advisory service and Mr. Lee and Mr. Luedtke were assigned to this work.

Other forms of cooperative ventures involving agricultural specialists have sought to control such diseases and pests as afflict livestock and plants, and thus to protect the agriculture of the Americas. For instance, there has been under way for some time a joint study between technical experts of the United States Department of Agriculture and the Mexican Department of Agriculture to find methods of controlling the pink bollworm. The Bureau of Plant Industry is maintaining an informal cooperative arrangement with the Division of Historical Research of the Carnegie Institution of Washington which also involves cooperation with Mexico and Central America. Under this arrangement the Bureau of Plant Industry details personnel, the Carnegie Institution furnishes the funds, and the Governments concerned supply the facilities. Mycology and plant disease surveys and entomological work in Latin America have been conducted by specialists of the Department of Agriculture, generally through informal cooperation with private concerns and research institutions in those countries. In the winter of 1936-37 the Bureau of Agricultural Economics detailed a marketing specialist to Habana, Cuba, for a period of approximately five months for the purpose of studying the methods used in the inspection of vegetables for export to the United States and to advise the Cuban Government with respect to certain problems encountered in its winter vegetable industry. From time to time, moreover, Latin American governments have obtained specialists from the Department of Agriculture for special studies in economics and marketing.

PROPOSED INSTITUTE OF TROPICAL AGRICULTURE

Finally, one project that looms large in plans for future inter-American agricultural cooperation is the proposed Institute of Tropical Agriculture, which would be established with private funds in a Latin American Republic. It is hoped that our Government can help initiate this project, cooperate in maintaining it, and furnish some of the technical specialists. Such an institute would provide a place where research could be conducted under suitable conditions with respect to tropical agriculture. Not only would it be instrumental in training the scientific personnel for the long-time task of developing tropical agricultural production in Latin America, but it would bring together students in agricultural sciences representing the various American nations and thus permit mutual understanding between these men, who would later become the leaders of agriculture in their respective countries, by serving as a scientific center where cooperative research projects would be formulated and developed. The institute would, moreover, strengthen the cultural relations between the Americas and serve as a symbol of amity.

§

TOBACCO IN PRINCIPAL PRODUCING COUNTRIES OF THE FAR EAST . . . . .

By J. Barnard Gibbs*

It is estimated that in recent years about 45 percent of the world tobacco production, or about 2.9 billion pounds, has been grown in the Far Eastern countries of China, Manchuria, the Japanese Empire, India, and the Netherlands Indies. These countries are also large consumers of tobacco products and for the 5 years 1934 to 1938, exports from the areas, largely of dark types, including cigar leaf, have been only about 145 million pounds annually. The countries have had a substantial deficit in flue-cured leaf, needed in the manufacture of cigarettes, which has been supplied by imports from the United States. The production of this type for use in replacing American, however, has been increased until it now approaches the total domestic demand. If recent trends continue, flue-cured production in the Far East may soon exceed domestic demand, and American flue-cured growers may face substantial competition with oriental flue-cured in European markets. Significant quantities of Indian flue-cured are already being exported to the United Kingdom.

LEAF PRODUCTION

The total tobacco production in the five countries under consideration, China, Manchuria, the Japanese Empire, India, and the Netherlands Indies, of about 2.9 billion pounds annually, represents approximately 45 percent of the world total in recent years, estimated at about 6.5 billion pounds. The production in both China and India has for many years approximated a billion pounds annually. They are thus on a comparative basis with the United States as tobacco-producing countries. Production in the Netherlands Indies has been in excess of 260 million pounds, that of the Japanese Empire (Japan proper, Chosen, and Taiwan) near 200 million, and that of Manchuria approximately 60 million pounds annually.

The trend in estimated total production for the five countries during the past two decades has been upward. The production of the past 5 years for areas regularly reporting is in each case higher than the average for the first 5 years of the preceding decade.[1] Production in India from 1934-35 to 1938-39 has been estimated at about 20 or 25 percent above that during the period 1920-21 to 1924-25.

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* Tobacco Specialist, Office of Foreign Agricultural Relations. More detailed information regarding tobacco in China, the Japanese Empire, India, and the Netherlands Indies is available in the Office of Foreign Agricultural Relations in the form of separate mimeographed reports, which will be supplied on request.

[1] Estimates of production for China and Manchuria are not available for the earlier period, and official estimates for the Netherlands Indies included only that of important commercial areas.

The production in areas reported in the Netherlands Indies has shown an irregular trend since 1920-21, but the output in the past 5 years has averaged about 10 percent above the average of the earlier period. The trend in the Japanese Empire has been upward, and the average production from 1934-35 to 1938-39 is about 12 percent above that of the first 5 years of the 1920's.

Much of the increase in total tobacco production of the Far East in recent years has been accounted for by larger crops of the lighter types of leaf needed for use in the domestic manufacture of cigarettes. The production of dark types, including cigar leaf, has tended to decline. In recent years dark types have accounted for about 58 percent of total production; light and medium-light sun- and air-cured types, about 33 percent; and flue-cured, 9 percent. For the 5 years, 1920-21 to 1924-25, it is estimated that over 60 percent of production was of the dark types, about 30 percent was of the light and medium-light sun- and air-cured types, and less than 2 percent was of flue-cured.

TABLE 1.–*Estimated production of tobacco, by types, in principal Far Eastern producing countries, average 1934-35 to 1938-39*

COUNTRY	FLUE-CURED	LIGHT AIR- AND SUN-CURED[1]	DARK, OTHER THAN CIGAR TYPES	CIGAR TYPES[2]	TOTAL
	Million pounds	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*
China	155	490	85	470	1,200
Manchuria	6	54	0	0	60
Japanese Empire[3]	61	122	12	(4)	195
India	27	183	730	210	1,150
Netherlands Indies	3	90	91	83	267
Total	252	939	918	763	2,872

[1] Includes medium-light types that would be classed between the American light and dark air-cured types.

[2] Cigar types, but extensively used in products other than cigars.

[3] Includes Japan proper, Chosen, and Taiwan.

[4] Insignificant quantities.

Compiled from official sources and reports by foreign representatives of the Office of Foreign Agricultural Relations.

TYPES OF TOBACCO

Tobacco grown in the Far East is made up of numerous types and varieties. The tobacco of India has been roughly classified into 84 types, grouped into 7 classes; that of China into 110 types, grouped into 4 classes; and that of the Japanese Empire into 44 types, grouped into 19 classes. The Netherlands Indies and Manchuria each produce a number of types. A substantial part of the production, especially in India, is of the *Nicotiana rustica* species, a species of the plant not commercially produced in the United States, and many of the types of the *Nicotiana tabacum* species in all of the countries concerned are not comparable with any American type. The lack of comparability and general absence of homogeneity in the leaf result from the fact that tobacco was originally introduced into the Far East from many different sources, from the promiscuous crossing that has taken place under farm conditions, from the variations in soil and climate, and from differences in cultural and curing practices.

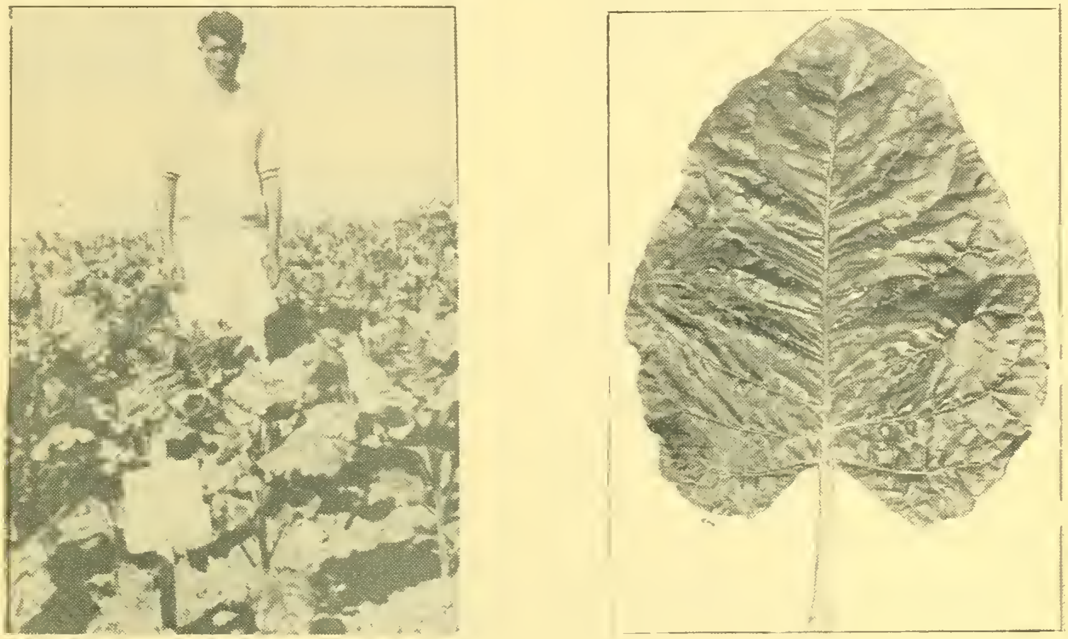

Figure 1.-Experimental field of *Nicotiana rustica* species, with typical leaf of Motihari type, this species.

The light air- and sun-cured types predominate in central and northern China, Manchuria, and the Japanese Empire. These areas have also become the leading flue-cured producing areas. Their general tendency to light types is attributed to the soil and to their location in a region of temperate climate. Production in South China, India, and the Netherlands Indies, where tropical conditions prevail and dark, heavy soils predominate, is largely of dark tobacco, including cigar types.

Most of the types produced in the Far East are used almost entirely for consumption in the countries where they are grown and in the domestic manufacture of products not requiring the use of American tobacco. The types of interest to American growers are limited to those that come into direct competition with American, either in the domestic manufacture of cigarettes or in the export trade.

FLUE-CURED TYPES

The commercial production of American-type flue-cured tobacco in the Far East was first undertaken in Japan proper. Production was started there in 1902 and was introduced into Chosen and Taiwan in 1914. Production in Manchuria began in 1915, in China in 1916, in India in 1927, and in the Netherlands Indies in 1928. When it was first introduced into the respective countries, the rate of expansion was pronounced, but it was as late as the 1930's before an exceptionally large volume was produced. For the 5 years 1931-32 to 1935-36, the combined production of the Far Eastern countries averaged about 191 million pounds, compared with the production from 1921-22 to 1925-26 of about 52 million pounds. Since 1935-36 production has been well above the average of the 5 years immediately preceding. The peak year was 1937-38, with 335 million pounds. Production declined to 222 million pounds in 1938-39 as a result of the small crop in China caused by war conditions, but the 1939-40 production for the five countries is tentatively estimated at 300 million pounds.

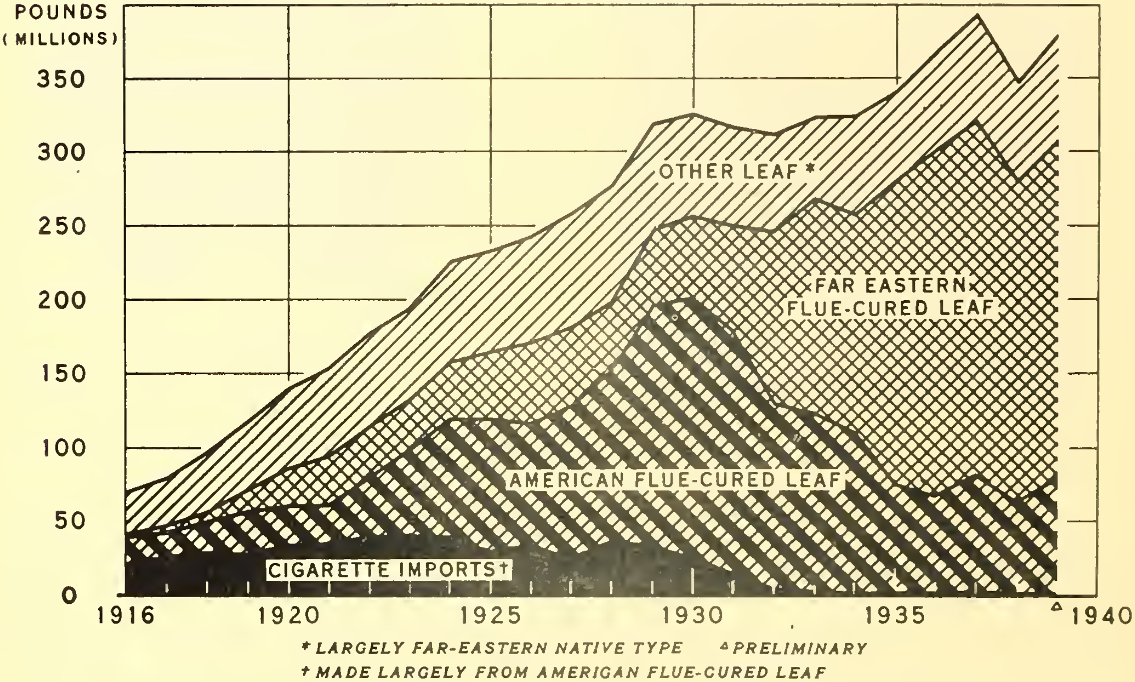

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Figure 2.-Production of flue-cured tobacco in Far Eastern countries.

The rapid expansion in production in recent years has resulted primarily from increased demand for flue-cured leaf in cigarettes produced in Far Eastern countries and to a lesser extent from an increasing export demand. Expansion in India has been encouraged by the action of the British Government in 1932 of granting duty preference of about 50 cents per pound on tobacco from Empire sources imported into the United Kingdom. This preference has enabled a substantial exportation from India to the United Kingdom, which probably could not have developed if the leaf had had to compete on an equal basis with low-grade American flue-cured.

The flue-cured leaf produced in the Far East is all grown from seed that originated in the United States. The leaf, however, differs in general quality and character from that grown in this country. In each of the Far Eastern countries the leaf is smaller than the American product. It approaches American flue-cured in color, but lacks oil and elasticity and has a duller finish. In general it has a moderate to high sugar content and burns well, but does not have the pleasant and distinctive aroma of the American product. Most of the leaf from all areas except India has a somewhat objectionable aroma, sufficiently different from that of American to make it generally unsuitable for blending in large quantities with American flue-cured and other mild cigarette tobacco. Indian leaf, however, is mild, neutral in taste and aroma, and can be more readily used in cigarette blends.

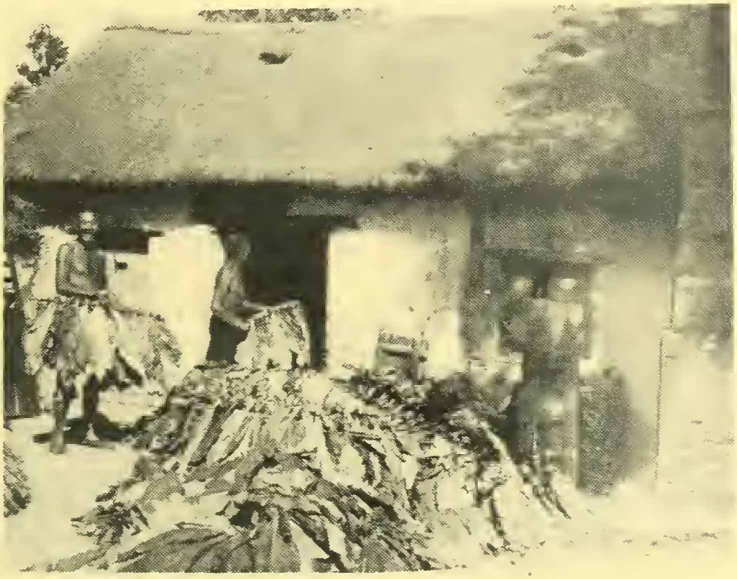

Figure 3.-Housing tobacco in flue-curing barn, Shantung Province, China.

The average cost to farmers of growing flue-cured leaf in the Far East is much below the average cost of about 14 cents per pound in the United States. Production costs in China, Manchuria, and the Netherlands Indies in recent years have averaged less than 5 cents per pound, and in India and the Japanese Empire less than 10 cents. Prices have usually been substantially above costs, and returns per acre from the crop have in general been above those that could be obtained from other types of tobacco or from other crops grown on land suited to flue-cured production.

LIGHT AND MEDIUM-LIGHT TYPES

The only Far Eastern light and medium-light tobaccos that come into direct and significant competition with American tobacco are certain of the Indian and Netherlands Indies types. Chinese and Manchurian leaf of these types is used largely in domestic products other than cigarettes, the only product in which American leaf is extensively used in any of the Far Eastern countries. The light and medium-light types grown in the Japanese Empire are used domestically in cigarettes and substantial quantities of certain of the types are exported to Egypt; however, they are so different from any American tobacco that they cannot be said to be in direct competition.

In India and the Netherlands Indies certain of the lighter native air- and sun-cured types are used in cigarettes, but not in strict competition with American leaf. Their use in cigarettes is confined largely to the cheaper brands, which sell at prices that prohibit the use of American tobacco. Certain of the types, however, are exported and sell abroad in more direct competition with American light air-cured types.

Light and medium-light leaf from India, somewhat similar to, but of lower quality than, the leading American light air-cured types, is exported to the United Kingdom where it competes with American in pipe-tobacco mixtures. Most of the leaf has been native to India for many years, but a small portion is of the burley type grown from American burley seed. Indian burley compares with the American product in color, but otherwise is generally inferior. The native types are light to medium light in color and body, and in general would be classed between the American light and dark air-cured types. They are papery in texture and have a low oil content but fair aroma.

Leaf from the Netherlands Indies, which competes abroad with American light air-cured types, is grown in eastern Java and is sent to continental Europe, where it is used in pipe tobacco, cigarettes, and in some cigars.

The cost of producing light and medium-light air- and sun-cured tobacco in the Far East, as a result of the great amount of labor involved in the handling of the leaf in curing, is close to the cost of Far Eastern flue-cured. Average costs in recent years in China, Manchuria, India, and the Netherlands Indies have been about 4 or 5 cents per pound. Cost in the Japanese Empire varies widely with types. For certain Chosen types the costs average as low as 3.5 cents per pound, while for certain of the types grown in Japan proper the average is over 10 cents per pound. The average cost in the United States of producing leaf somewhat comparable to these Far Eastern types is estimated at about 12 cents per pound.

DARK TYPES, INCLUDING CIGAR TYPES

The dark tobacco in the Far East, including cigar types, that competes with American tobacco is limited primarily to leaf produced in the Netherlands Indies. There is but little dark American tobacco sold in the Far East; the competition occurs in the export trade to continental Europe and, of the Sumatra cigar-wrapper type, in the American market. Small quantities of dark leaf from South China is exported to Egypt and some dark leaf from India is sent to the United Kingdom, but neither directly displaces any American type.

The Netherlands Indies dark and cigar tobacco includes a number of types, of which the famous Sumatra cigar-wrapper leaf is the outstanding. The Sumatra tobacco is grown on large estates and under the close supervision of trained experts. It is of a high quality and considered among the best cigar-wrapper types of the world. It has a thin, elastic, good-burning leaf, and is exported to countries throughout the world. Substantial quantities are imported into the United States, where it sells in competition with American wrapper types. Other cigar leaf from the Netherlands Indies includes several filler and binder types grown in eastern Java, and exported to continental Europe. They are used in cigars and in many countries in pipe tobacco and cigarettes as well. The strictly dark types of the Netherlands Indies, other than cigar, are limited to a few types grown in eastern Java, which are also sent to continental Europe and compete on European markets with dark American types.

Production costs for the dark tobacco types, other than cigar leaf, are low, from 4 to 5 cents per pound compared with an average in the United States of about 11 cents. Average costs for the cigar types grown in China and India do not vary materially from the prevailing costs for the other dark types, but costs in the Netherlands Indies are higher. The average cost of production and delivery to the Netherlands for Sumatra wrapper leaf for the 5 years 1934-1938 was about 1.13 guilders per pound, or, at the average rate of exchange for these years, about 70 cents per pound. Costs for the Java cigar types, which are primarily filler and binder leaf, were much lower, averaging for recent years about 10 or 12 cents per pound.

Figure 4.-A field of young plants of Sumatra wrapper leaf, with curing sheds in background.

IMPORTS AND EXPORTS

For the past three decades or more the combined exportation of leaf tobacco and tobacco products from the countries under review, excluding intershipment among them, with the exception of a few years have exceeded imports. Most of the exportation has been of leaf from the Netherlands Indies, India, and China; and most of the importation, especially in recent years, has been of leaf from the United States. In earlier years imports of tobacco products, particularly cigarettes, accounted for a substantial part of the total, but for the past few years they have represented only a small fraction.

IMPORTS

Leaf - Imports of leaf tobacco into the Far East have for several years been chiefly of flue-cured leaf from the United States. Imports of the darker American types have been insignificant, and for the past three decades or more imports of all types from sources other than the United States have represented only a small percentage of the total.

Imports of American flue-cured became important with the rapid expansion in cigarette consumption that occurred between 1915 and 1931. During the 5 years 1916-1920, imports from the United States, almost entirely flue-cured, increased moderately but for the period averaged only about 15 million pounds annually. Increases during the next decade were more pronounced. From 1921 to 1925 imports averaged about 55 million pounds, and from 1926 to 1930 about 135 million pounds annually. Most of the increase resulted from larger takings by China, which has been the leading consumer of American flue-cured leaf in the Far East.

By 1931 much of the increase in production of American-type flue-cured in the Far East had occurred; and, beginning with 1932, its use in place of American enabled a rapid decrease in imports. Imports of American leaf, primarily as a result of reduction in takings by China, dropped from the 1931 record high of over 185 million pounds to only about 40 million pounds in 1935. Since 1935 there has been some increase in imports of American leaf, including stems. For the years 1936 to 1938 they ranged between 70 and 75 million pounds. The increase is attributed to a number of causes, of which the major ones may be considered as temporary. Increases in 1936 and 1937 resulted primarily from a shortage in total flue-cured supplies in China. Between 1933 and 1935 stocks of American leaf in China were reduced to a minimum with the expectation that domestic production of flue-cured would soon fill the domestic requirements, except for high-grade cigarettes where American is considered essential, and that the high prices for American flue-cured that were established in 1933 would decline before stock replacement became necessary. Developments did not bear out these expectations in detail, and some increased purchases of American were necessary in 1936 and 1937 in order to meet requirements for immediate use. Imports so far as possible, however, were restricted to the lowest grades of American leaf and to stems. Imports of the latter prior to 1936 had been small.

The maintenance of imports in 1938 and 1939 resulted primarily from war conditions, which lowered flue-cured acreage in China and curtailed movement of the leaf to manufacturing centers.

Tobacco products - Imports of tobacco products during the past three decades - with the exception of cut tobacco imported into the Netherlands Indies, chiefly for use in the manufacture of cigarettes - have been largely of cigarettes from the United States or the United Kingdom. For a period prior to 1940 cigarette imports represented one-half or more of combined tobacco imports. For the next decade the volume continued relatively large, averaging about 35 million pounds annually, but by the end of the period represented only a fraction of the combined imports. Beginning with 1930 cigarette imports declined rapidly and since 1932 they have totaled only about 2 million pounds annually.

EXPORTS

Leaf - Exports of leaf tobacco, excluding intershipments, have until recent years been almost entirely of dark or medium-light types. Shipments from the Netherlands Indies and India to continental Europe and the United Kingdom have accounted for most of the total. Average annual exports from the five countries by 5-year periods beginning with 1916-1920 and ending with 1931-1935 declined from about 200 million pounds in the first period to approximately 160 million for the last. Exports from the Netherlands Indies have accounted for about 80 percent of the total. British India has supplied about 15 percent, and the remaining 5 percent has come from China and Japan.

Exports from 1936 through 1938, the last year for which data are available, declined to about 155 million pounds annually. There has also been some shift in origin and types of tobacco exported. For these 3 years, exports from the Netherlands Indies have represented about 70 percent of the total, from British India approximately 22 percent, and from China and Japan 8 percent.

The increases in exports from the last three countries are largely increases in exports of flue-cured leaf to the United Kingdom and other European countries. Shipments of British Indian flue-cured to the United Kingdom, which began in 1933, increased from about 5 million pounds in 1936 to nearly 20 million in 1938. Increased exports from China and Japan have been of flue-cured leaf, partly to continental Europe.

Tobacco products - Far Eastern countries have never been important exporters of tobacco products. Excluding intershipments, exports have never exceeded a few million pounds annually, and in recent years have declined to only about 1 million pounds.

MANUFACTURE AND CONSUMPTION

Total consumption of tobacco in the Far Eastern countries under review is estimated at about 2.75 billion pounds, farm weight, annually. Approximately 64 percent of the total is used for pipe smoking, 14 percent in the form of cigarettes, 6 percent in cigars and cheroots, and the remaining 16 percent as chewing tobacco. *bidies*, and *strootjes*.[2]

Tobacco products are used by both sexes in all of the countries, but consumption by women is more prevalent in China, Manchuria, and India than in the Japanese Empire and the Netherlands Indies. Per-capita consumption, however, is low in all of the countries, ranging from about 2.1 pounds annually in the Japanese Empire to 3 pounds in India. Consumption in the United States in recent years has been about 6.6 pounds per person.

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[2] The *bidie* is a product widely used in India. It is composed of granulated tobacco rolled in the leaf of the ebony tree. *Strootjes*, which are widely used in the Netherlands Indies, are made of granulated tobacco rolled in corn husks or tree leaves.

PRODUCTS OTHER THAN CIGARETTES

Consumption of tobacco other than in cigarettes is largely in the form of strictly native products. In all of the countries except the Japanese Empire, where the entire supply of all tobacco products originates with the monopolies, products other than cigarettes are generally produced and sold by the tobacco growers themselves or by small village establishments. Much of the tobacco is smoked in pipes or used for chewing by the farmers who produce it or is sold directly to other farmers and local village people without being processed. Another large portion is purchased by small concerns, which make it into pipe tobacco, chewing tobacco, cigars, *bidies,* and *strootjes.* These establishments are usually shops that prepare the product for sale direct to consumers. The shopkeeper and sometimes one or more employees do the processing by hand or with crude native implements. Large establishments making products other than cigarettes are limited to a few cigar-producing concerns found in all of the countries, *bidie* manufacturers in India, and *strootje* manufacturers in the Netherlands Indies. These large concerns, however, use hand methods, and their chief difference from the smaller establishments is that they employ a larger number of workers and produce recognized brands.

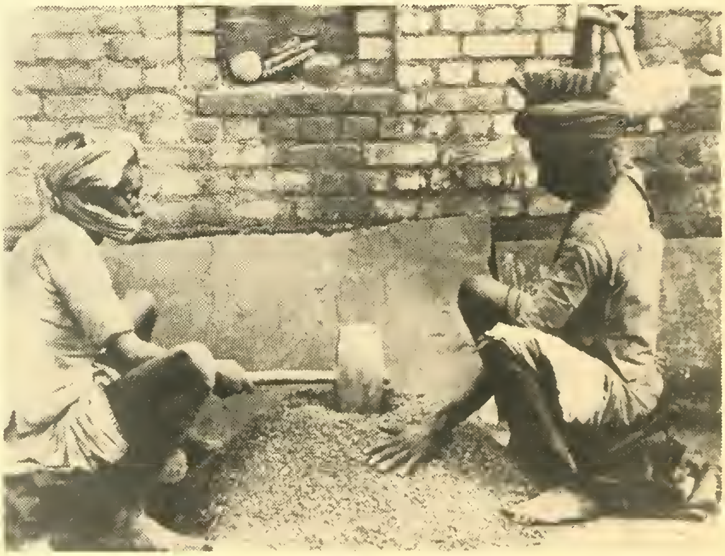

Figure 5.-Pounding tobacco into dust for use in making hookah tobacco. (Courtesy of the Agricultural Marketing Office of the Government of India.)

Leaf used in products other than cigarettes is almost entirely of domestic origin. Some of the leaf used in one Far Eastern country originates in another, but little American or other imported leaf is used. The admixture of other materials with tobacco is common in most of the products. Snuff and pipe tobacco for use in dry pipes frequently contains oil of various kinds, perfumes, and other flavoring material. The hookah pipe (water pipe) tobacco of India is a mixture of powdered tobacco, molasses, and various spices, oils, and perfumes. The ebony leaves used in rolling the *bidies* represent about 30 percent or more of the bulk of that product and make the smoke a blend from the tree leaves and the tobacco. The same is true to a lesser extent of *strootjes,* in which either corn husks or tree leaves are used.

CIGARETTES

Cigarettes are the only tobacco product in the Far East the manufacture of which is primarily in the hands of large commercial concerns, and they are the only product in which American leaf is extensively used. The introduction of cigarettes into the Far East was made by British and American interests; and the preference for American-type leaf is a result of their activity.

Prior to 1905 practically all of the cigarettes consumed in these countries were imported from Great Britain or the United States. Domestic manufacture in the Far East began in the early 1900's, and in all the countries except Japan proper under the supervision of British and American interests. The output soon expanded to the point where it supplied most of the demand. In 1916 approximately two-thirds of the total cigarette consumption was from domestic manufacture. The importance of imported cigarettes continued to decline, and since 1932 they have accounted for less than 1 percent of total cigarette consumption.

From the beginning of the World War, cigarette consumption in the Far East expanded rapidly. There was a continued upward trend from 1916, when about 70 million pounds of leaf were used in cigarettes, to 1930, when approximately 325 million pounds were used. An arresting of the upward trend occurred in 1930 as a result of widespread depressed economic conditions in most of the countries and a boycott of British goods in India.[3]

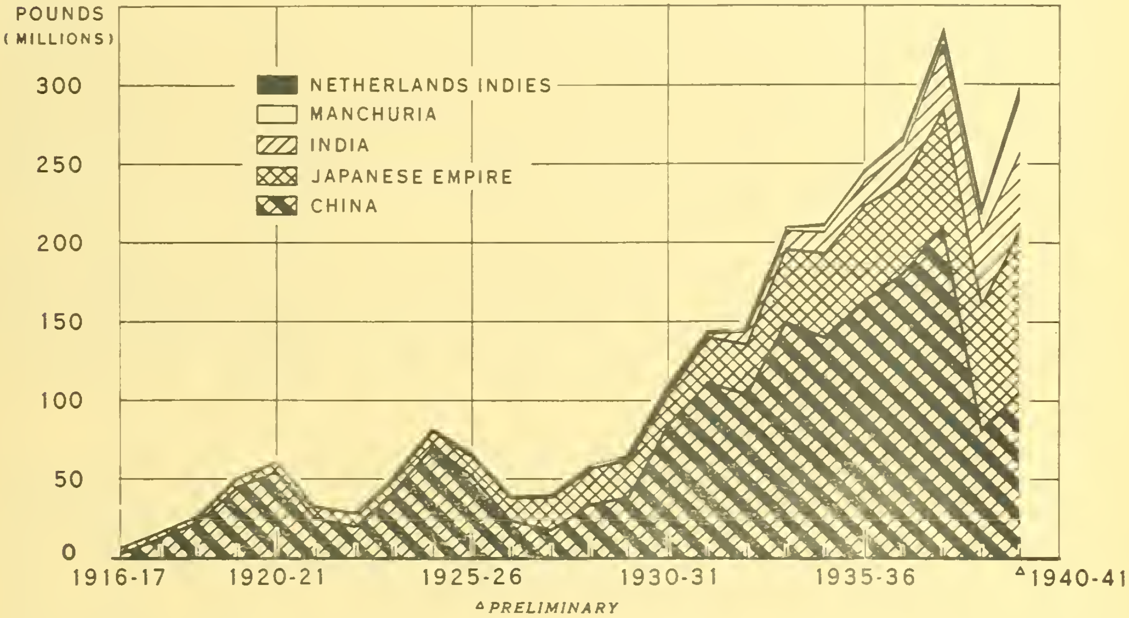

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Figure 6.-Weight of cigarettes imported into Far Eastern countries, excluding shipments, and weight of leaf, by types, used in domestic manufacture of cigarettes.

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[3] The cigarette industry of India is largely in the hands of the British, and boycotts caused sharp reduction in cigarette sales. The Gandhi movement and the accompanying boycott of 1930 and subsequent years reduced consumption of cigarettes from about 21 million pounds for the fiscal year 1928-29 to 11 million pounds for 1931-32.

Reduced business activity - combined with a number of other factors, including higher leaf duties, higher internal taxes on cigarettes, and military disturbances in China and Manchuria in 1932-33 - caused consumption to continue at about the 1930 level through 1934. Beginning with 1935 there was a further pronounced expansion in consumption. The peak was reached in 1937, when total leaf used in cigarettes during the year reached about 393 million pounds. This recent expansion resulted from improved economic conditions in most of the countries concerned, together with absence of political disturbances and reduction in manufacturer's costs made possible by the utilization of larger quantities of cheap domestic leaf in place of American.

The Sino-Japanese War, which in 1938 spread through much of China, caused a sharp decline in consumption in that country, thereby lowering total consumption for the Far East to about 348 million pounds. Consumption in 1939 was increased to about 380 million pounds as a result of improvement over 1937 in transportation facilities in China, which enabled a freer movement of cigarettes into important consuming centers, and to a continued upward trend in the consumption of the other countries.

The increased requirements in the Far East in total leaf for cigarettes have been made up largely from domestic leaf. Utilization of American flue-cured increased sharply until 1930, when about 200 million pounds, or 62 percent of total leaf used in domestically manufactured or imported cigarettes, was of American flue-cured. Since that year there has been a rapid decline. For the 3 years 1937 to 1939, utilization of American flue-cured tobacco, including a large percentage of stems formerly used only in small quantities, amounted to only about 75 million pounds annually, or 20 percent of the total. On the other hand, utilization of domestic flue-cured, which in 1930 had increased to only about 55 million pounds representing about 17 percent of the total consumed, increased rapidly, and for the 3 years 1937 to 1939 averaged about 228 million pounds annually, or 61 percent of the total.

Utilization of leaf other than flue-cured, largely native types grown in the Far East, has been more regular. Since 1930 it has ranged between 55 million and 73 million pounds annually. The volume in recent years has been about the same as 10 years ago, but the proportion to total leaf used has declined and since 1937 has averaged about 19 percent of the total.

The rapid shift from American to domestically grown flue-cured during the past 10 years has resulted from a number of factors, of which the most important are interrelated. They include (1) depreciation of the currency in certain of the countries, (2) self-sufficiency policies of the various Governments, and (3) the need for increased revenue from tobacco caused by higher Government costs. The various Governments have raised import duties on tobacco and tobacco products, increased internal taxes on cigarettes, and, in the Japanese Empire, tobacco monopolies have been required to render greater financial returns to the Government. The cigarette-manufacturing industry has been placed under closer Government supervision. Except in China and India, prices for cigarettes have been made subject to Government control, and in the Netherlands Indies the Government has decreed that each manufacturer of domestic cigarettes must use a definite percentage of domestic leaf.

Another significant factor that has resulted in reduced utilization of American flue-cured has been the increase in the average farm price in the United States from about 18.5 cents per pound during the 5 years 1928-1932 to about 23 cents for the period 1934-1938. The effect of the increase has been especially pronounced in China, Manchuria, and the Japanese Empire, where the exchange value of local currency has declined.

PROBABLE DEVELOPMENTS AFFECTING AMERICAN TOBACCO

The outlook at present indicates that American tobacco farmers may expect increased competition from Far Eastern tobacco. It is believed that production in these countries of types competing with American leaf will continue to increase more rapidly than consumption. Exports to the Far East may therefore decline to the small quantities of flue-cured needed in the manufacture of high-quality cigarettes. Exports from the Far East, especially of flue-cured, are expected to increase and to replace more American leaf, particularly in the United Kingdom and continental Europe.

There are large districts in each of the Far Eastern countries under consideration suited to the production of tobacco sufficiently similar to some of the American types to enable them to replace American, at least in low-priced products. Expansion in the production of competitive types in these areas will probably continue as long as financial returns per acre from them substantially exceed the returns from staple food and fiber crops. This might be for a considerable period. There is already a heavy pressure on land in the Far East; and, should population continue its upward trend, the incentive for higher financial returns per acre will become greater. High money-yielding crops will be grown and exchanged for imported low money-yielding staple crops. In comparison with most crops in the Far East, tobacco, especially flue-cured, and other types competing with American now give both a higher labor and a higher total financial return per acre than most other crops. With increases in the supply of labor, and presumably with continued low wages, tobacco will continue in a favorable position.

Recent trends indicate that exports of American tobacco to the Far East, which in recent years have been almost entirely of flue-cured, will in the future be even smaller than the relatively low exports of the past few years. Higher import duties, increased internal taxes on tobacco products, and higher prices for American leaf have forced manufacturers to use increasing quantities of the lower-priced domestic flue-cured in all but high-priced cigarettes, which represent only about 5 percent of the total. Many of the low-priced straight flue-cured cigarettes are now made exclusively from domestic leaf.

There is little prospect of increased sales of the higher-priced cigarettes. The need for funds by the respective Governments to meet higher expenses will probably cause any increase in consumption to be checked by still higher taxes. High taxes, combined with the diminishing importance of the taste for American flue-cured tobacco that has resulted from the gradual increase in the use of domestic leaf during the past few years, may result in the use of American flue-cured in only about 10 percent of the total cigarettes consumed. Probably only about half of the tobacco in this 10 percent would be made entirely from American leaf.

Exports of both domestically grown foreign types and native types of tobacco from the Far East may increase substantially during the next few years. It is expected that as long as the United Kingdom continues its duty preference India will export larger quantities of flue-cured leaf and will maintain or increase the present level of exports of other types that are competitive with American leaf.

Flue-cured production in the Netherlands Indies may soon increase to the point where substantial quantities can be exported. Such exports may partly replace American flue-cured leaf in the Netherlands. The low quality of the leaf would probably prevent its replacing substantial quantities of American in countries that do not grant preferential treatment to the Netherlands Indies product. Competition with Netherlands Indies types other than flue-cured will probably continue about as in recent years. Prices for them are expected to continue low and production can be expanded to meet any increase in demand.

China and Manchuria may eventually export relatively large quantities of flue-cured leaf. The combined production of these two countries is now below domestic requirements; but, when the present conflict with Japan is ended, production in China may quickly expand. If expansion in Manchuria continues at the rate of the past 3 years, the supply in both of these countries may soon exceed domestic demand. If at the same time an improvement is made in the general quality and in the grading of leaf, a substantial foreign demand for it may be created. The cost of producing flue-cured leaf in the Japanese Empire is somewhat higher than in China and Manchuria, the area suited to the crop in the Empire is limited, and it is doubtful whether its production will be increased above domestic demand. Exports from the Japanese Empire would have difficulty in competing with similar-quality and lower-priced flue-cured leaf from China and Manchuria.

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DENMARK'S AGRICULTURE AS AFFECTED BY WAR . . . . .

By P. G. Minneman*

For many years Denmark has been the world's most important exporter of three livestock products - butter, bacon, and eggs. These products were exported principally to the United Kingdom and Germany. Denmark's ability to export depends primarily upon its ability to import concentrates and grains for feeding its livestock. During the World War these imports were cut off, and as a result production and exports declined sharply. The present blockade will probably again cut off Denmark's raw material supplies and cause a sharp decline in Danish production and exports. The recent change in Denmark's political status from that of a neutral has immediately shifted all Danish export surpluses to Germany. The United Kingdom will now turn primarily to Empire countries to supply products formerly obtained from Denmark.

Denmark is a small, densely populated country consisting largely of tillable land, with an intensive agriculture directed especially toward the production of livestock products for export. The entire country is only a little larger than the State of Maryland, but its population is more than four times that of Maryland. Although Denmark is small, it is the world's largest exporter of three important agricultural products - butter, bacon, and eggs - and is renowned for the high quality of these products. In 1938 Denmark supplied about 44 percent of the world's total bacon and ham exports and about 25 percent of the total exports of butter and eggs.

The proximity of large markets for these products in Europe's densely populated industrial sections, particularly in the United Kingdom and Germany, and the fact that Danish land is well adapted for the production of feed have contributed to the development of intensive livestock production. The livestock industry, however, has expanded far beyond the capacity of Denmark to produce feed, and as a result large quantities of feed must be imported to maintain the industry on an export basis. Practically the total production of bacon is exported, as is also more than four-fifths of the butter and three-fourths of the eggs. The United Kingdom has been the most important market for these products, taking nearly all of the exported bacon and about three-fourths of the butter and eggs.

Denmark's importance as a supplier of livestock products to the countries now at war, together with the present complete control of Denmark's production and trade by one of the belligerents and blockade of raw-material supplies by the others, raises the question of how this situation may affect the future volume of production and, in turn, world trade in these commodities. Denmark's export surplus of livestock products may be expected to decline sharply later in the year, as present feed and fertilizer stocks become exhausted, and will probably become more and more depleted as long as the blockade is continued.

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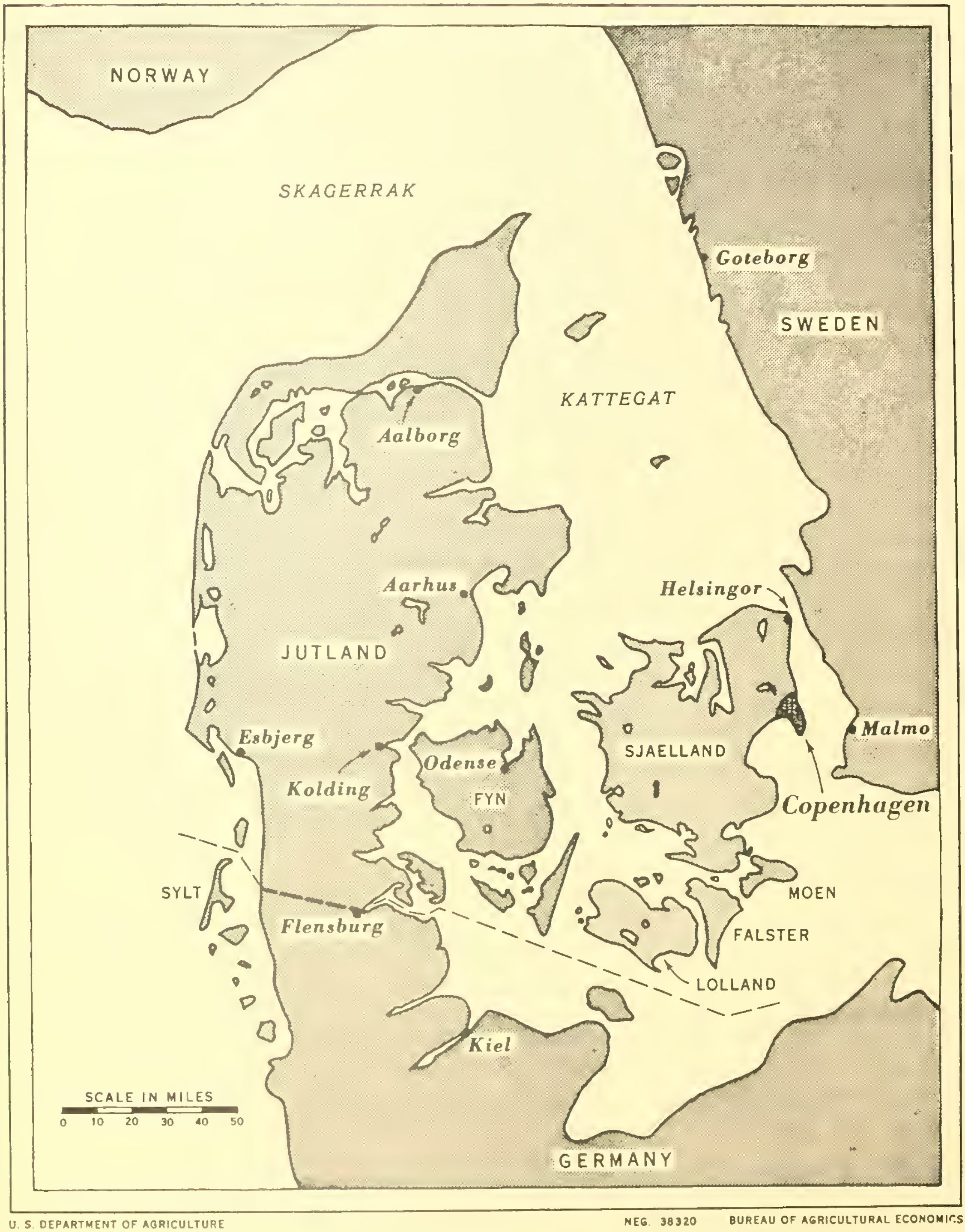

Figure 1.-Map of Denmark.

Figure 2.-Typical Danish landscape. (Courtesy Danish Consulate General, New York City)

THE PEOPLE AND THE LAND

The total population of Denmark in 1938 was 3,777,000, equivalent to about 228 per square mile. Although the population is not so dense as that of the United Kingdom or Germany, it is far denser than the 42 per square mile of the United States. In 1935 about 42 percent of Denmark's population lived on farms, and about 54 percent was classified as living in rural districts. Fewer than one-third of the people were engaged in agriculture, as shown by the following distribution according to employment in 1935.

	Percent
Agriculture, forestry, and fishing	31.5
Industry	29.0
Commerce and transportation	18.0
Others	21.5
Total	100.0

The proportion engaged in fishing and in forestry is very small; fishing represented only 1 percent of the total in 1930.

The total area of the country is about 16,576 square miles, of which nearly three-fourths is used for agricultural purposes. Compared with other Scandinavian countries, Denmark has very little forest and waste land. Nonagricultural land makes up only one-fourth of Denmark, as compared with roughly 90 percent nonagricultural in Norway and Sweden. Nearly two-thirds of Denmark's total land area is tillable.

Although Denmark is located about as far north as northern Ontario, its climate is more temperate than that of most parts of the United States. February temperatures average 32° F., and July temperatures 60° F., about 10° to 15° cooler than the average during July in most parts of the United States. The climate is greatly tempered by the effect of the Gulf Stream Drift. Average precipitation is about 25 inches a year. The land is mostly gently rolling. Although favorable for most farm crops, temperatures are not sufficiently high nor the growing season long enough for the production of corn.

About two-thirds of the country's area is made up of the Peninsula of Jutland, which extends from northwestern Germany (see figure 1). The remaining one-third of the area consists of numerous islands, the most important of which are Sjaelland, on which Copenhagen, the capital, is located, and Fyn, which lies between Jutland and Sjaelland. Jutland is connected with Fyn by a bridge, and the latter is connected with Sjaelland by a railway ferry.

Figure 3.-Typical Danish country mill gives way to electric power. (Courtesy Danish Consulate General, New York City)

CHARACTER OF DANISH AGRICULTURE

FARM OWNERSHIP AND LAND UTILIZATION

Farms in Denmark are predominantly small and owner-operated; about 94 percent of the 204,000 farms are operated by persons owning the land or paying for it. The average acreage of cropland and permanent meadow per farm is 38 acres, although the total area per farm is slightly larger - possibly 42 acres if woods, farm buildings etc., are included. The size varies widely. About one-fifth of the farms have only between 1 and 3 acres of cultivated land; about one-half have between 8 and 40 acres; and only 3 percent have more than 250 acres. The small farms are more intensively organized, are more heavily stocked with cows, hogs, and especially poultry, and have relatively larger proportions of their land in intensive root crops than the larger farms, which have a greater part of their area in grain and permanent pasture. Indebtedness is relatively high, being estimated at about 60 percent of the total farm assets.

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[1] For background information on the history of agricultural development, cooperation, and land ownership legislation, see references *(1)* to *(3)*. All italic numbers in parentheses refer to Literature Cited, p. 326.

TABLE 1.--*Land use in Denmark, 1939*

LAND USE	AREA[1]	PERCENTAGE DISTRIBUTION-	
		OF TILLABLE LAND	OF ALL LAND
TILLABLE LAND	*1,000 acres*	*Percent*	*Percent*
Grains:			
Barley	1,021	15.5	-
Oats	916	13.9	-
Rye	333	5.1	-
Wheat	324	5.0	-
Mixed	743	11.3	-
Total grains	3,337	50.8	-
Forage crops:			
Pasture	1,136	17.3	-
Hay	634	9.7	-
Green fodder	19	0.2	-
Total forage crops	1,789	27.2	-
Root crops:			
Roots for feed	960	14.6	-
Potatoes	168	2.6	-
Sugar beets	144	2.1	-
Total root crops	1,272	19.3	-
Seed crops	101	1.5	-
Fallow	78	1.2	-
Total tillable land	6,577	100.0	62.0
PERMANENT MEADOW			
Hay[2]	300	-	-
Pasture[2]	740	-	-
Total permanent meadow[3]	1,333	-	12.6
Total agricultural	7,910	-	74.6
Forests	860	-	8.1
Other area[4]	1,838	-	17.3
Total area	10,608	-	100.0

[1] Acreage in crops includes only that in farms. About 2 percent of additional cropland was located in towns.

[2] Estimated from 1938.

[3] Includes additional land in commons.

[4] Includes about 133,000 acres of cropland in towns.

Danish agricultural census.

Table 1 shows the approximate land use in 1939. About 62 percent of the total area of the country consisted of tillable land in crops, and an additional 13 percent was in permanent meadow used for both hay and pasture. The total agricultural land, therefore, made up 75 percent of the country's total area, whereas forest occupied only about 8 percent. Of the cropland, about one-half was in grain, one-fourth in hay and pasture, and about one-fifth in root crops, most of which were used for feed.

SHIFT FROM GRAIN TO LIVESTOCK PRODUCTION

Denmark has not always been an exporter of livestock products. Until about 1860 the country's agriculture was organized primarily for the production of grain, which was the chief cash crop. Exports consisted principally of grain, chiefly to Germany, although some live cattle and hogs were also exported. The abolition of the Corn Laws in England in 1849 gave a new stimulus to Danish grain exports, but shortly thereafter came the turning point, when several factors combined to bring about a distinct change in the character of Danish agriculture from grain to livestock production. From a relatively extensive type of grain farming, with some cattle, hogs, and sheep, it shifted to a far more intensive type, in which the crops and additional imported feed were used for the production of livestock and the export of bacon, butter, and eggs (see figure 4).

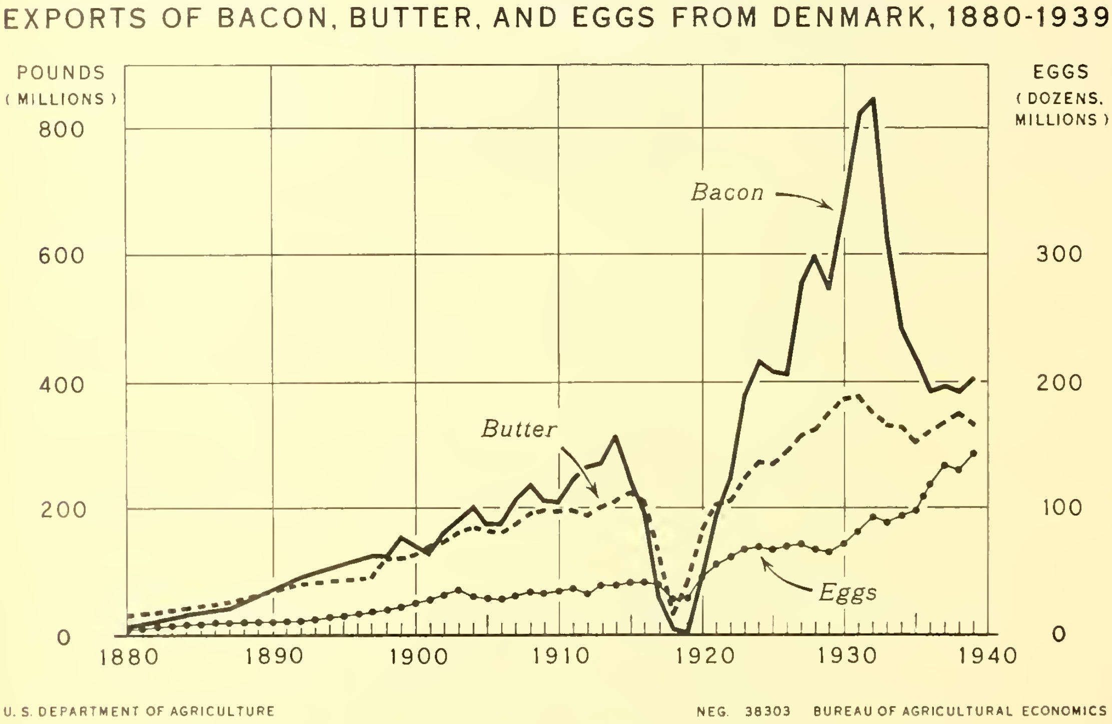

Figure 4.-Exports of bacon, butter, and eggs from Denmark, 1880 to 1939

One reason for this change was the opening of vast new wheat areas in other parts of the world, particularly in America, where large-scale production, together with improved ocean transportation, made the production of grain for export unprofitable in Denmark. After 1875 the price of grain declined sharply, but the price of bacon declined only slightly and butter prices rose, with the result that Danish farmers gave more and more attention to livestock products. Furthermore, in the absence of artificial fertilizers, the long emphasis on grain production had reduced land fertility, and farmers looked to livestock to restore productivity.

Another factor that helped to bring about this change was the period of wars with Germany from 1848 to 1864, which for a time cut off Denmark's principal export market for grain and live animals. In 1887 Germany again stopped imports of live hogs from Denmark, and in 1892 England prohibited imports of live cattle from the Continent. Danish farmers therefore shifted from exports of live animals to exports of cured meat, especially bacon, for which England was the best market. The trade difficulties with Germany at that time also hastened the shift to England as the principal export market.

The resulting stimulus to livestock production is shown by the increase in livestock numbers. The number of dairy cattle doubled from 1866 to 1914; but the greatest increase was in hogs, of which there were 400,000 in 1866 as compared with 2,497,000 in 1914. Exports of bacon increased from about 15 million pounds to about 313 million in 1914, and exports of butter during the same period increased from 15 million pounds to about 210 million. Exports of eggs increased about sixfold. On the other hand, exports of grain, which were valued at about 38 million kroner in 1870 (about 10 million dollars), declined rapidly until grain was on a net import basis in the early 1880's. It has remained on that basis ever since. In addition, imports of oil meal increased rapidly. At the same time the domestic production of grain increased, and greater attention was devoted to the production of root crops for feed.

The World War resulted in a very serious setback to Danish agriculture. Not until the period 1920-1923 did agricultural production and exports regain their 1914 volume. Since then, the production of bacon, butter, and eggs for export has been further expanded. By 1939 the number of cattle had increased 32 percent above the 1914 level, and the number of hogs, although materially below the 1931 peak, exceeded the pre-war figure by 25 percent. An increase of about 8 percent, however, would normally be due to the inclusion of South Jutland after the War. Similarly, exports of butter in 1938 were 66 percent greater than in 1914, and egg exports were four times those of 1914. Bacon exports had nearly trebled to 1931, when British import restrictions forced a sharp reduction in Danish bacon exports.

Most outstanding has been the increase in production efficiency. Grain production has increased by 50 to 75 percent as a result of increased yields and a shift to higher-yielding crops. The milk production per cow has increased about 25 percent since 1914, and increased efficiency in the production of bacon and eggs has probably been even more significant.

PRINCIPAL CROPS

About one-half of all the cropland is devoted to grains, of which barley, oats, and mixed grain are most important. About one-fourth is devoted to forage crops, such as rotation pasture, hay, and green feed, and about one-fifth is in root crops. Grains, including straw, which is practically all used for feed, supply about 50 percent of the farm-grown feed, root crops about 41 percent, and hay about 9 percent.

TABLE 2.--*Area, yield, and production of principal crops in Denmark 1909-1913*[1] *and 1937-1939*

CROP	AREA		YIELD PER ACRE		PRODUCTION	
	1909-1913	1937-1939	1909-1913	1937-1939	1909-1913	1937-1939
	1,000 acres	*1,000 acres*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*
Wheat	154	323	41.4	47.0	6,322	15,173
Rye	636	352	30.0	29.3	19,104	10,298
Barley	639	971	42.0	58.4	26,860	56,625
Oats	1,161	924	52.2	79.4	60,557	73,237
Mixed grain	446	750	[2] 37.2	[2] 46.8	[2] 16,600	[2] 35,010
Total grain	3,036	3,320	–	–		–
Potatoes	161	183	202.7	253.0	32,642	47,603
			Short tons	*Short tons*	*1,000 short tons*	*1,000 short tons*
Sugar beets	64	96	13.6	17.4	[3] 871	[3] 1,638

[1] Estimated for area equivalent to present boundaries.

[2] In terms of bushels of barley.

[3] Of beets. Total production of sugar averaged 128,000 short tons in 1909-1913 and 251,000 in 1937-1939.

Statistisk Aarbog. Danish Government, Copenhagen, published annually.

During the past 3 years, 1937-1939, Denmark has produced about 88 percent of its total grain requirements, whereas during 1909-1913 domestic production satisfied only 77 percent of the total grain requirements. This greater degree of self-sufficiency has been accomplished in spite of the fact that total grain requirements are now about one-third greater than before the World War.

Of bread grains (wheat and rye), domestic production suffices to satisfy milling requirements. Danish wheat, however, being of a soft type, is not well adapted for milling; consequently, domestic wheat is used principally for feed and replaced by imported grain for milling. Wheat and rye each supply about one-half of the bread flour. Danish wheat is practically all winter wheat, largely of the red type *(4)*.

Other grains are used almost entirely for feed. As a rule only from 20 to 25 percent of all the grain produced on small and medium-sized farms, and from 30 to 50 percent of that produced on the large farms, is sold from the farm. Since the World War a distinct shift has taken place in the relative importance of wheat as compared with rye. Wheat production has more than doubled, and that of rye has been reduced to about one-half of the 1909-1913 level (see table 2). Furthermore, the imports of wheat have increased, while those of rye have been reduced.

Root crops, with the exception of potatoes and sugar beets, are practically all used for feed. Most important are swedes and beets, although some sugar beets, turnips, and carrots are also grown for feed. The sugar-beet crop is sufficient to satisfy fully the country's requirements of sugar and to leave a small surplus for export. Nearly 30 percent of all the hay is cut from permanent meadow, whereas about 70 percent, largely clover, is grown on cropland. The commercial production of various kinds of seeds for export provides another relatively important crop.

Since 1909-1913 grain production (adjusted to present boundaries) has increased about 50 percent. Three factors have made this possible: an increase of about 10 percent in the total grain acreage; the shift in production from rye and oats, with low feed yields per acre, to the higher-yielding wheat and barley; and, most important, the increase in per-acre yields of wheat, barley, and oats of 14, 39, and 52 percent, respectively (see table 2).

The high development of crop production is indicated by the high per-acre yields of 47 bushels of wheat, 58.4 bushels of barley, and 79.4 bushels of oats in 1937-1939, compared with only 13.6, 22.7, and 30.5 bushels per acre, respectively, in the United States. Commercial fertilizer is extensively used to supplement heavy applications of farm manure. The total quantity of commercial fertilizer used in 1938 was nearly double that used in 1909-1913 and was sufficient for an application of 241 pounds per acre for every acre of cropland in the country.

IMPORTANCE OF LIVESTOCK

The importance of the livestock industry is indicated by the fact that about 90 percent of the farm income is obtained from the sale of livestock and its products. The two most important branches of the industry, dairying and hog raising, complement each other, since skim milk, the by-product of dairying, supplies much of the feed for the hogs.

TABLE 3.-*Livestock numbers in Denmark and estimated quantities of livestock p[illegible] exported, 1938*

KIND	NUMBER ON FARMS[1]	NUMBER SHAUGHTERED[2]	MEAT AND MEAT PRODUCTS		
			PRODUCED[2]	CONSUMED DOMESTICALLY[2]	EXPORTED
	Thousands	*Thousands*	*Million pounds*	*Million pounds*	*Million pounds*
Horses	565	13	8	7	1
Cattle	3,186	[3] 836	350	300	50
Hogs	2,842	[3] 4,215	565	125	[4] 440
Sheep	187	86	7	7	0
Poultry	27,863	-	40	34	6
Total	-	-	970	473	497
Dairy products					
Butter			418	70	348
Cheese			74	54	20
Condensed milk			38	0	38
			Million dozen	*Million dozen*	*Million dozen*
Eggs			170	40	130

[1] Number as of July 15, 1938, includes 1,600,000 cows, 326,000 brood sows, and 12,000,000 hens.

[2] Does not include small quantities slaughtered on farms but does include lard and edible by-products.

[3] In addition, 134,000 cattle and 114,000 hogs were exported.

[4] Includes 384 million pounds of bacon and 23 million pounds of lard.

Data on livestock numbers and exports from official Government sources; production [illegible] on various private estimates.

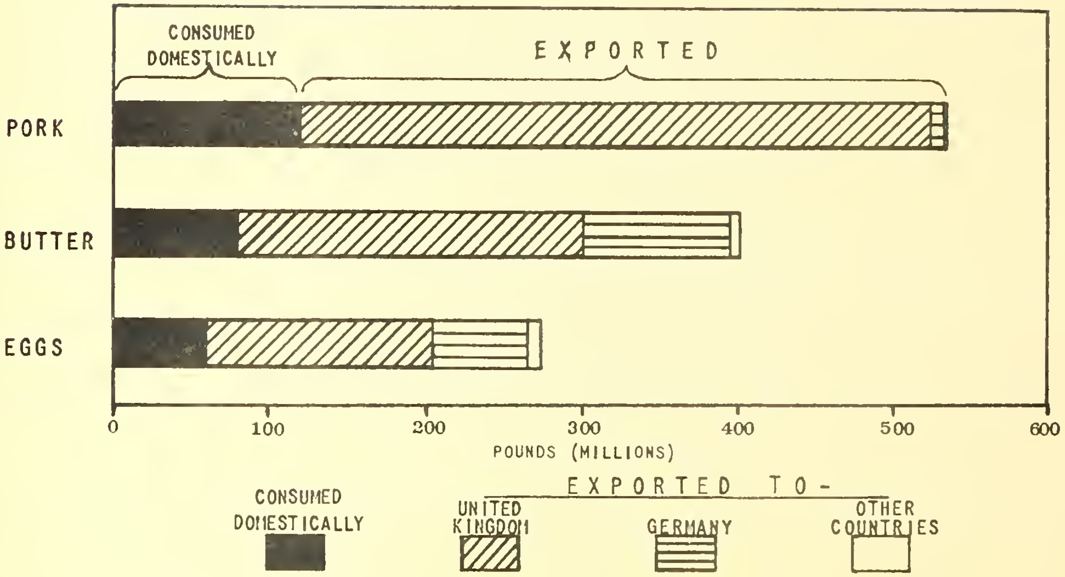

Figure 5.-Domestic consumption and exports to principal countries of pork, butter, and eggs, 1939.

Dairy cow numbers in 1939 were about one-third greater than in 1914. More significant is a 24 percent increase in the milk production per cow and an even greater increase in butterfat production during this period. In 1938, the average production per cow for the country as a whole was about 7,500 pounds of milk and 275 pounds of butterfat. From 10 to 12 percent less milk is now required to produce a pound of butter than was required in 1913. This high production has been brought about largely through scientific breeding and feeding and the extensive use of cow-testing associations through which production and feed consumption records of individual animals are kept. Over 40 percent of the cows were included in such associations in 1938.

About two-thirds of the dairy cattle are of the Red Danish breed, and about one-fifth are of the Black and White Jutland breed. Herds are small, averaging about eight cows each. Pasture plays an important part in the feeding during the summer months from May to mid-October. Practically no feed concentrates are fed during May and June, and only small quantities during the remainder of the pasture season. On the small farms cattle are commonly tied out on pasture, but on the larger farms pasture fields are fenced. The principal dairy feed during the winter consists of root crops, such as beets, hay, straw, and concentrates consisting of oilseed meal and some grain.

Farmers deliver nearly all (93 percent) of the whole milk to dairies or creameries, where the milk is separated and the skim milk pasturized, soured, and, together with buttermilk, returned to the farms for use as hog feed. Only about 9 percent is used as fluid milk for direct consumption in urban areas. The remainder (84 percent of the total production) is used in the manufacture of butter, cheese, and condensed and powdered milk. Most of the creameries are organized on a cooperative basis. The proportion of the milk used for various purposes in 1938 is as follows:

	Percent
Used on farms	7.3
Sold for consumption as whole milk	9.2
Used for butter	79.2
Used for cheese	3.8
Used for condensing	0.5
Total	100.0

The total butter production in 1938 was 418 million pounds, of which only about 70 million pounds were consumed in Denmark and 348 million pounds were exported to the United Kingdom and Germany (see table 3). Exports, therefore, amount to about 83 percent of the total production. Margarine is extensively used in place of butter, the consumption being about 172 million pounds annually, or 2½ times the quantity of butter consumed. Cheese and other dairy products are relatively less important; production of cheese in 1938 was 74 million pounds, of which about one-fourth, or 20 million pounds, was exported, and three-fourths used domestically. In addition, about 38 million pounds of condensed milk products were manufactured and exported.

Figure 6.-Dairying is Denmark's leading industry. Danish red dairy cows being tethered out on pasture. (Phot. Jonals Co., Copenhagen. Courtesy Danish Consulate General, New York City)

The total value of *pork* produced is approximately equivalent to that of dairy products. Danish bacon is known for its high and uniform standard of quality, particularly in the English markets. The term "bacon" refers to what is commonly known as "Wiltshire side," the practice being to split the hog from end to end into two halves, so that the bacon includes the shoulders, sides, and hams. For this purpose the Danes have developed a rangy, bacon-type hog, which is generally slaughtered at about 180 to 190 pounds in weight. This hog was developed from the "Landrace" breed after more than 50 years of experimentation and breeding, but that breed is sometimes crossed with Yorkshire boars to obtain the added hybrid vigor of first generation crosses. About 98 percent of all Danish hogs are of the bacon type. Under the slaughtering and processing methods used by the Danes, the yield of lard is very low - only about 3 percent, compared with 15 percent in the United States. While the type of hog produced in Denmark would never yield as much fat as hogs produced in this country, the lard yield could readily be trebled if the hogs were fed to a heavier weight and processed in a manner similar to that practiced in the United States.

Bacon for export is prepared in only a limited number of packing plants, usually cooperatives, and under close government inspection. Farmers are paid according to quality of carcass. A high degree of standardization is indicated by the fact that in 100,000 sides the total variation from average weight does not exceed 4 pounds.

The principal feed for hogs is grain, barley, wheat, rye, and corn. Skim milk and buttermilk are also fed, supplemented by meal of meat, fish, soybeans, peanuts, etc. Some root crops are fed, particularly to brood sows.

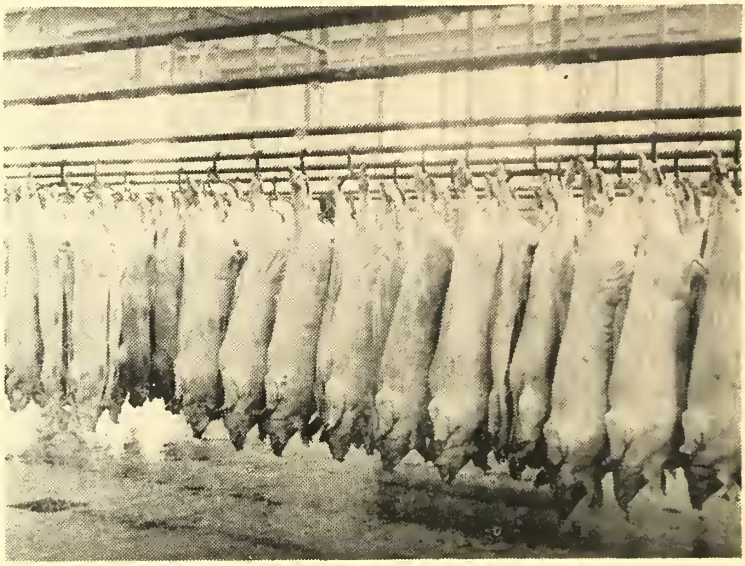

Figure 7.-Bacon production is one of Denmark's leading industries. Scene in a cooperative packing plant. (Phot. Jonals Co., Copenhagen. Courtesy Danish Consulate General, New York City)

The hog industry reached its peak of expansion in 1931 and 1932, when hog numbers were more than double those in 1914. At the beginning of 1933, however, Great Britain placed a quota on the imports of bacon from non-British Empire countries in an effort to stimulate domestic production in the United Kingdom and countries under British control. Under a trade agreement with the United Kingdom, Denmark was assured 62 percent of that country's total bacon imports from non-Empire countries. This represented a reduction of about 45 percent in Denmark's bacon exports. At about the same time Germany placed an embargo on livestock, of which during preceding years about 120,000 head had been imported from Denmark. As a consequence, Denmark was faced with the problem of adjusting its hog industry to the sharply reduced demand.

To accomplish this adjustment the Danish hog control law was enacted in February 1933, empowering the Minister of Agriculture to control hog production and slaughter *(5)*. It provided penalties for noncompliance with the regulations, imposed fees on hogs slaughtered, and imposed fixed prices for allotted numbers of hogs and lower prices for "surplus" hogs. As a result, hog numbers were reduced from 5.4 million in 1931 and 4.9 million in 1932 to about 3 million recently, and the number slaughtered annually in packing plants was reduced by one-half from 7.8 million in 1932 to 3.9 million in 1938. Bacon exports dropped from 846 million pounds in 1932 to an average of 394 million annually during the 3 years 1937-1939.

Denmark is also on a surplus basis with respect to *other* kinds of *meat*, and very little meat of any kind is imported. Most important other meats are beef and veal, the production of which was estimated at about 350 million pounds in 1938. Exports, including meat products, amounted to about 50 million pounds. The extent of the export surplus of meat is shown by the fact that total production in recent years has been about 1,000 million pounds, including all kinds of meat and meat products, while total exports averaged 535 million pounds.

Figure 8.-Eggs are Denmark's third most important agricultural export. (Courtesy Danish Consulate General, New York City)

The poultry industry has also expanded rapidly. Exports of eggs before the World War were 33 million dozen annually, compared with 143 million dozen in 1939, representing a total value 38 percent as great as that of butter or bacon exports. About three-fourths of all the eggs produced are exported. As in the case of other products, eggs are marketed primarily through cooperative organizations, and great care is exercised to maintain the high standard of quality.

FOREIGN TRADE

During the past 10 years, 1930-1939, Denmark's foreign trade has varied from about 2.5 to 3.3 billion kroner (551 million to 728 million dollars) annually. This exceeds the value of the country's total industrial production, which during recent years has averaged about 2.5 billion kroner. The value of imports has slightly exceeded that of exports every year.

Up to the present Denmark's foreign trade has been principally with two countries - the United Kingdom and Germany - which together have taken three-fourths of Danish exports and supplied 60 percent of its imports. The United Kingdom has far exceeded Germany as a market for Danish products. Only about 5 percent of Denmark's exports are supplied directly to countries outside of Europe, and about 12 percent of her imports are directly from these countries. It should be pointed out, however, that a considerable proportion of the imports actually originates outside of

Europe but is reshipped through the United Kingdom. The percentage distribution of imports and exports, by value, during the 3 years 1937-1939 is as follows:

	Imports	*Exports*
	Percent	*Percent*
United Kingdom	35.4	54.0
Germany	25.3	20.8
Other Europe	27.0	20.0
Total Europe	87.7	94.8
United States	6.9	1.5
Other countries	5.4	3.7
Total	100.0	100.0

EXPORTS

Denmark's largest export items are butter, bacon, and eggs, which account for 56 percent of the value of total exports during recent years (see table 4). Together with live animals and other livestock products, exports of livestock represent about 71 percent of the value of total exports. Exports of Danish-grown crops add only another 3 percent. The remaining 26 percent consists largely of industrial products, vegetable oil and oil meal from the oil-pressing industry, and exports of fish.

TABLE 4.-*Danish imports and exports, by value, average 1937-1939*[1]

ITEM	IMPORTS	EXPORTS	NET IMPORTS (-) OR NET EXPORTS (+)		PERCENTAGE DISTRIBUTION	
			IMPORTS	EXPORTS	IMPORTS	EXPORTS
	Million kroner	*Million kroner*	*Million kroner*	*Million kroner*	*Percent*	*Percent*
Livestock and products:						
Live animals	1	84	-	+83	-	-
Bacon	0	368	-	+368	-	-
Other meat	1	52	-	+51	-	-
Butter	0	368	-	+368	-	-
Other dairy	0	27	-	+27	-	-
Eggs	0	139	-	+139	-	-
Other products	12	63	-	+52	-	-
Total	14	1,101	-	+1,087	0.8	71.0
Farm crops:						
Grain flour	106	27	-79	-	-	-
Other crops	2	19	-	+17	-	-
Total	108	46	-62	-	6.5	3.0
Commercial fertilizer	56	0	-56	-	3.3	0
Oil seeds and products:						
Oil-cake meal	112	15	-97	-	-	-
Oilseeds, nuts	83	1	-82	-	-	-
Vegetable oils	5	27	-	+22	-	-
Total	200	43	-157	-	12.0	2.8
Whale oil and fish	26	37	-	+11	1.5	2.4
Exotic crops:						
Fruit, fresh	12	0	-12	-	-	-
Fruit, dry	8	0	-8	-	-	-
Tobacco	26	0	-26	-	-	-
Coffee	24	0	-24	-	-	-
Cotton	11	0	-11	-	-	-
Other	17	0	-17	-	-	-
Total	98	0	-98	-	5.9	0
Industrial and all other products	1,178	332	-846	-	70.0	20.8
Total all items	1,680	1,559	-121	-	100.0	100.0

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[1] At the average rate of exchange for the period 1937-1939 the krone was worth 27.413 cents.

Danmarks Vareindførsel og -Udførsel, 1937; *Vareomsaetningen met Udlandet*, December 1938-1939, and Statistical Department, Danish Government, Copenhagen.

Table 5 shows the relative importance of the United Kingdom and Germany as export markets for the principal products. It will be noted that practically all the bacon and about three-fourths of the butter and eggs were shipped to the United Kingdom, whereas Germany took most of the remaining one-fourth of the butter and eggs. For the other livestock products, Germany constituted a more important market, taking most of the live cattle, hogs, and lard. and nearly one-half of the beef and cheese.

TABLE 5.–*Destination of exports of butter, bacon, and eggs from Denmark, average 1937-1939*

DESTINATION	QUANTITY			PERCENTAGE DISTRIBUTION		
	BUTTER	BACON	EGGS	BUTTER	BACON	EGGS
	Million pounds	*Million pounds*	*1.000 dozen*	*Percent*	*Percent*	*Percent*
United Kingdom	250	387	98	74	98	72
Germany	85	2	34	25	1	25
Other countries	4	5	4	1	1	3
Total	339	394	136	100	100	100

Calculated from official data.

IMPORTS

Although the total value of all imports slightly exceeded that of exports. this is not the case with respect to agricultural products, of which exports were more than three times as large as imports. even including seeds and commercial fertilizers. The most important agricultural import item is feed, in the form of grain, oil-cake meal. and oilseeds. Principal nonagricultural imports are coal. iron and steel. petroleum. textiles, machinery. and automobiles.

Grain and livestock products represented only about 7 percent of all imports (see table 4). An additional 12 percent consisted of oil meal and cake for feed and oilseeds and nuts for pressing in Denmark. Another 6 percent may be classed as exotic plant products not produced in Denmark. such as fruit, tobacco, coffee. cotton, etc.

During recent years only about 10 to 20 percent of Denmark's grain requirements for flour and feed have been imported. Imports of corn have been the largest, making up from one-third to one-half of the total. Most of the remainder consists of wheat and rye. The average quantities of grain and flour that were imported and exported during 1937-1939 are as follows:

	Imported *1,000 short tons*	*Exported* *1.000 short tons*
Grain		
Wheat	157	11
Rye	120	0
Barley	21	123
Oats	35	10
Corn	388	0
Total	721	144
Flour	18	9

Part of the corn is imported from countries in southeastern Europe, but the greater part is obtained from North and South America. Nearly all of the wheat imported originates in American countries, but most of the rye has been obtained from eastern Europe.

Almost all oil meal and cake for feed is imported. From about two-thirds to three-fourths is imported as meal and cake, and the remainder is obtained from domestic crushing of imported oil seeds and nuts *(6)*. The average imports of oilseeds for crushing and of oilseed cake and meal during 1937-1939 are as follows:

	Oilseeds and nuts *1,000 short tons*	*Oilseed cake and meal* *1,000 short tons*
Soybean	194	34
Copra	82	100
Peanuts	48	108
Palm kernel	27	4
Flaxseed	25	17
Cottonseed	9	358
Sesame	8	0
Sunflower	6	129
Rapeseed	2	12
Other	6	21
Total	407	783

An average of 269,000 short tons of oil meal were produced in Denmark in 1937-1939, in addition to 783,000 short tons imported. Most of the imported oil meal is obtained from European countries, but the oilseeds, although shipped principally from England, originated in countries outside of Europe.

Nearly all the commercial fertilizer used in Denmark is imported. Most of the phosphate fertilizer material is obtained from French Morocco and Algeria; potash is obtained from Germany and nitrogenous fertilizers from Norway and Chile.

TRADE WITH THE UNITED STATES

The total trade between Denmark and the United States is relatively small compared to the trade with some other countries; however, Denmark imported 25 million dollars' worth of goods from the United States annually during 1937-1939. Danish imports from the United States were more than 5 times as large as Danish exports to this country, which averaged 4.8 million dollars annually.

About one-half of the imports from the United States were agricultural products, about one-fourth were automobiles, and about one-eighth petroleum products. The average value, in terms of dollars, of the principal United States products imported into Denmark during 1938-1939 is as follows:

Agricultural products -	*Million dollars*	Nonagricultural products -	*Million dollars*
Grain	6.4	Automobiles	6.4
Cotton	1.9	Petroleum products	4.5
Fruit	1.8	Iron and steel	0.6
Oilseed meal, cake	1.2	Machinery	0.5
Tobacco	0.9	Other	2.2
Oilseeds	0.7	Total	14.2
Other	0.3		
Total	13.2	Total all	27.4

Data on the exact quantities of products imported during these years are not available, but United States data on exports show average quantities of specified products exported to Denmark during 1937-1939 as follows:

	Unit	Quantity
Corn	1,000 bushels	1,391
Wheat	do.	980
Rye	do.	468
Cottonseed cake	short tons	19,180
Linseed-oil cake	do.	5,846
Cotton	bales	33,771
Tobacco	1,000 pounds	5,260
Dried fruit	do.	20,670

About one-third of Danish exports to the United States consisted of agricultural products. Most important of these products was cheese, of which nearly 5 million pounds were exported to this country. Small quantities of seeds, meat, and fish were also exported from Denmark to the United States.

EFFECT OF WAR ON PRODUCTION AND EXPORTS

The present war affects Denmark's economy even more than did the World War. Her two principal markets are again belligerents on opposing sides. Germany now controls Denmark's production and trade, thus cutting off exports to Denmark's former principal market - the United Kingdom. At the same time the latter country is blockading Denmark's raw-material supplies of feed and fertilizer.

What reorganization in Danish agriculture will this necessitate? To what extent under these conditions will Denmark be able to maintain her volume of agricultural production and exports, and what effect may this have on world markets? Some indication of the answer to these questions may be obtained by examination of Denmark's import requirements of raw materials and the degree to which she depends on these imports, as well as by observing what occurred during the World War.

Although Denmark's agriculture produced a tremendous export surplus, production is to a considerable extent dependent on imports of raw material, and certain items are on a deficit basis. A surplus is produced of all kinds of livestock products, particularly dairy products, bacon, and eggs. Potato and sugar production is sufficient to meet the country's requirements, with small export surpluses. Bread grain production is also sufficient for domestic requirements, although imported grain has been largely substituted for home-grown grain because the latter is inferior for milling. There is, however, a lack of feed grains, the importation of which during recent years has supplied only 10 to 20 percent of the total grain requirements. Supplies of high-protein feed in the form of oil meal and cake are dependent almost entirely upon imports of oilseed meal and upon imports of seeds and nuts for crushing in Denmark. Cotton, tobacco, coffee, and tropical and dried fruits are entirely imported. In addition, Denmark is almost wholly deficient in raw materials for commercial fertilizer.

During the World War, Denmark's neutrality gave her unique economic opportunities. Agriculture was at first affected favorably, since stocks on hand permitted fairly large production to be maintained, while belligerents sought, and were willing to pay high prices for, Danish products. Shrewd merchants and manufacturers benefited greatly through increased sales to belligerents. As it became more difficult to obtain raw materials, however, production declined rapidly, and stricter governmental control was applied in an effort to maintain supplies and reasonable prices.

A shortage of foodstuff supplies was the first to develop in 1914 *(7)*. Soon after the war began the Government authorized the prohibition of certain exports, set maximum prices for some foodstuffs, in some cases, and took over supplies. In order to regulate supplies and prevent an excessive rise in prices, export taxes were levied on livestock and its products and domestic consumption was subsidized. As the situation became more critical in 1917, rationing was imposed on bread, flour, butter, and pork.

FEED SUPPLIES

Grain - Prior to the World War Denmark imported about one-fourth of her grain requirements. In 1915 and even 1916, grain imports were well maintained (see table 6), but as a result of intensified submarine warfare imports were reduced in 1917 and almost entirely cut off in 1918. Domestic grain production declined somewhat in 1916; but the 1917 crop was unusually poor, with production one-third below the pre-war average. Not until 1922 did grain production again reach pre-war levels (for comparable boundaries).

Because of the small crop in 1917 and the lack of imports in 1918, total grain supplies for two successive years were 37 percent below normal. Toward the end of 1914 the Government took over certain supplies of wheat and rye and prohibited the use of these crops for brewing and distilling. Late in 1915 the Government regulated the use of the wheat and rye crops, reserved specified portions for human food, and notified farmers as to the quantity each was bound to deliver. By 1917 the situation was sufficiently critical to justify the rationing of bread and flour and the taking over of the entire harvest of wheat and rye and part of the barley and oats. To stimulate production in 1918, the Government was authorized to purchase Norwegian saltpeter to be sold to farmers at prices below cost.

Today the grain situation is measurably better than in 1914. Net grain imports in 1939 were only 256,000 short tons, or less than one-half those in 1914, and during the past 3 years only 6 to 18 percent of the grain requirements was imported. At the same time domestic production in 1937-1939 was more than 50 percent greater than in 1909-1913 (for equivalent boundaries). If this level of production can be maintained, and if supplies are not removed from the country, Denmark will be about 90 percent self-sufficient with respect to grain, although millers may be forced to use entirely the lower-quality domestic wheat. Most of the grain imports are obtained from America, which may be cut off by the blockade, and southeastern European countries are not likely to be able to supply sizeable quantities during the war. Continuation of hostilities, therefore, may force Denmark to rely almost entirely on home-grown supplies.

TABLE 6.–*Danish grain and oil meal feed supplies, domestic and imported, 1939, with comparisons*

YEAR	GRAIN			OIL MEAL AND CAKE		
	DOMESTIC PRODUCTION	NET IMPORTS 1	TOTAL SUPPLY 1	DOMESTIC PRODUCTION 2	NET IMPORTS	TOTAL SUPPLY
	1,000 short tons	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*
1881	2,047	-51	1,996	[3] 0	28	28
Average 1909-1913.	2,736	815	3,551	[3] 55	527	582
1914	2,152	614	2,766	[3] 123	477	600
1915	2,536	1,076	3,612	[3] 90	633	723
1916	2,291	670	2,961	[3] 70	517	587
1917	1,720	434	2,154	[3] 20	170	190
1918	2,100	-18	2,082	[3] 0	[3] 0	0
1919	2,384	364	2,748	98	146	244
1920[4]	2,446	264	2,710	[3] 140	284	424
1921	2,615	567	3,182	[3] 150	406	556
1922	2,796	714	3,510	[3] 130	411	541
1923	2,993	881	3,874	200	617	817
1924	2,850	1,111	3,951	246	715	961
1925	3,181	971	4,152	200	806	1,006
1926	2,928	774	3,702	212	750	962
1927	3,036	1,429	4,465	233	780	1,013
1928	3,872	1,273	5,145	[3] 250	702	952
1929	3,873	895	4,768	302	840	1,142
1930	3,684	1,598	5,282	266	708	974
1931	3,450	2,112	5,562	312	753	1,065
1932	3,729	1,802	5,531	312	530	842
1933	3,660	1,327	4,987	310	545	855
1934	3,720	832	4,552	318	551	869
1935	4,060	616	4,676	358	595	953
1936	3,170	820	3,990	318	715	1,033
1937	3,860	877	4,737	356	653	1,009
1938	4,460	591	5,051	269	795	1,064
1939	4,040	256	4,296	[3] 263	746	1,009

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[1] Flour and meal converted to grain equivalent.

[2] Domestic crushing from imported seeds, etc.

[3] Estimated.

[4] From 1920 includes South Jutland, equivalent to an additional 8 percent in grain-producing area.

Data calculated from official sources except as indicated

Future crop production will depend partly on commercial fertilizer material, nearly all of which is imported. Supplies of raw phosphate rock from French Morocco and saltpeter from Chile may be cut off, but an alternative supply of saltpeter may be available from Norway; and Germany should be able to supply sufficient potash. Although adequate fertilizer supplies are probably available for the 1940 crop, a reduction in livestock numbers may also result in lower crop yields. It is significant that yields increased sharply as long as livestock numbers increased, until 1930-1935, whereas in subsequent years livestock numbers were reduced and yields failed to increase appreciably in spite of heavier applications of commercial fertilizer.

Protein concentrates. - Very little high-protein concentrate feed is grown in Denmark. Almost the entire supply consists of imported oil meal and cake and the supply produced domestically from imported oilseeds and nuts. In 1909-1913 only about 10 percent of the oil meal was obtained from domestic crushers, which during recent years have supplied between one-fourth and one-third of the total supply (see table 6). As in the case of grain, the imports of both oil meal and oilseeds were sharply reduced in 1917 and were completely stopped in 1918 as a result of the war (see figure 9). Under present war conditions, Denmark may again find her supplies cut off, since crushers in neighboring countries may not be able to supply much oil meal, nor will Denmark be able to obtain oilseeds from America, Asia, and Africa.

LIVESTOCK PRODUCTION

Dairy products. - During the World War the shortage of feed and the ready market for cattle and meat forced (1) a reduction in cattle numbers, (2) a reduction in milk products, both per cow and total production, (3) an increase in butter consumption, and (4) consequent sharp reduction in butter exports. Although total milk production began to decline in 1915, it fell off most sharply when oil meal supplies were reduced and finally cut off (see figure 9). In 1918 and 1919, milk production was reduced to only about one-half the 1914 level. Production per cow declined by one-third, and butter exports in 1918 dropped to only 15 percent of those in 1914.

The sharp decline in butter exports (see table 7) is accounted for by the fact that domestic requirements of fluid milk and butter tended to remain normal and therefore constituted a far greater proportion of the decreased milk production. Another very important cause of the decline was the cutting off of import supplies of vegetable oil and oilseeds, which almost completely stopped the manufacture of margarine and forced the consumers to turn to the use of butter. Margarine production in 1914 amounted to 124 million pounds, or more than twice the amount of butter consumed, but by 1918 margarine production amounted to only 2 million pounds. Therefore, according to the extent to which consumers maintained their butter-margarine consumption, they would have used 122 million pounds more butter in 1918, an amount equal to nearly 60 percent of the total butter exports in 1914. It may be assumed, therefore, that the shortage of feed and the decreased milk production were responsible for at least half of the 178-million pound reduction in butter exports, and that the shortage of edible oils for margarine manufacture was responsible for about half.

TABLE 7.-*Danish livestock production and exports by principal items. 1939 with comparisons*[1]

YEAR	DAIRY				HOGS		EGG EXPORTS
	CATTLE NUMBERS	MILK PRODUCTION		BUTTER EXPORTS	NUMBERS	BACON EXPORTS	
		PER COW	TOTAL				
	Thousands	*Pounds*	*Million pounds*	*Million pounds*	*Thousands*	*Million pounds*	*Million dozen*
1881	1,470	3,530	3,172	68	527	23	5
1909	2,254	6,060	7,772	197	1,468	207	33
1914	2,463	6,060	7,942	210	2,497	313	38
1915	2,417	5,890	7,546	224	1,919	244	40
1916	2,290	5,890	6,716	211	1,983	195	40
1917	2,458	5,530	6,346	135	1,641	56	37
1918	2,124	4,300	4,402	32	621	5	27
1919	2,188	3,990	4,158	81	716	1	28
1920[1]	2,504	4,980	5,958	165	1,116	88	46
1921	2,591	5,780	7,342	203	1,430	187	54
1922	2,525	5,950	7,804	211	1,899	245	61
1923	2,523	6,330	8,472	246	2,855	377	67
1924	2,667	6,610	9,054	272	2,868	431	69
1925	2,758	6,610	9,200	271	2,517	417	67
1926	2,838	6,750	9,984	292	3,122	413	69
1927	2,913	6.790	10,280	316	3,731	557	70
1928	3,016	6,830	10,532	326	3.363	598	66
1929	3,036	7,050	11,168	351	3,618	546	65
1930[2]	3,057	7,280	11,698	373	4,872	674	72
1931	3,208	7,230	12.120	378	5,453	820	81
1932	3,237	6,930	12,120	348	4,886	846	92
1933	3,134	6,720	11,900	332	4,407	631	89
1934	3,062	6,830	11,740	330	3,061	484	94
1935	3,072	6,860	11,300	305	3,036	434	98
1936	3,107	7,220	11,640	322	3,496	384	117
1937	3,084	7,500	11,700	337	3,066	393	134
1938	3,186	7,500	11,900	348	2,842	384	130
1939	3,258	–	–	331	3,127	405	143

[1] From 1920 includes South Jutland This area included about 8 percent of the cattle and 10 percent of the hogs.

[2] From 1930 includes only rural districts.

Data calculated from official sources

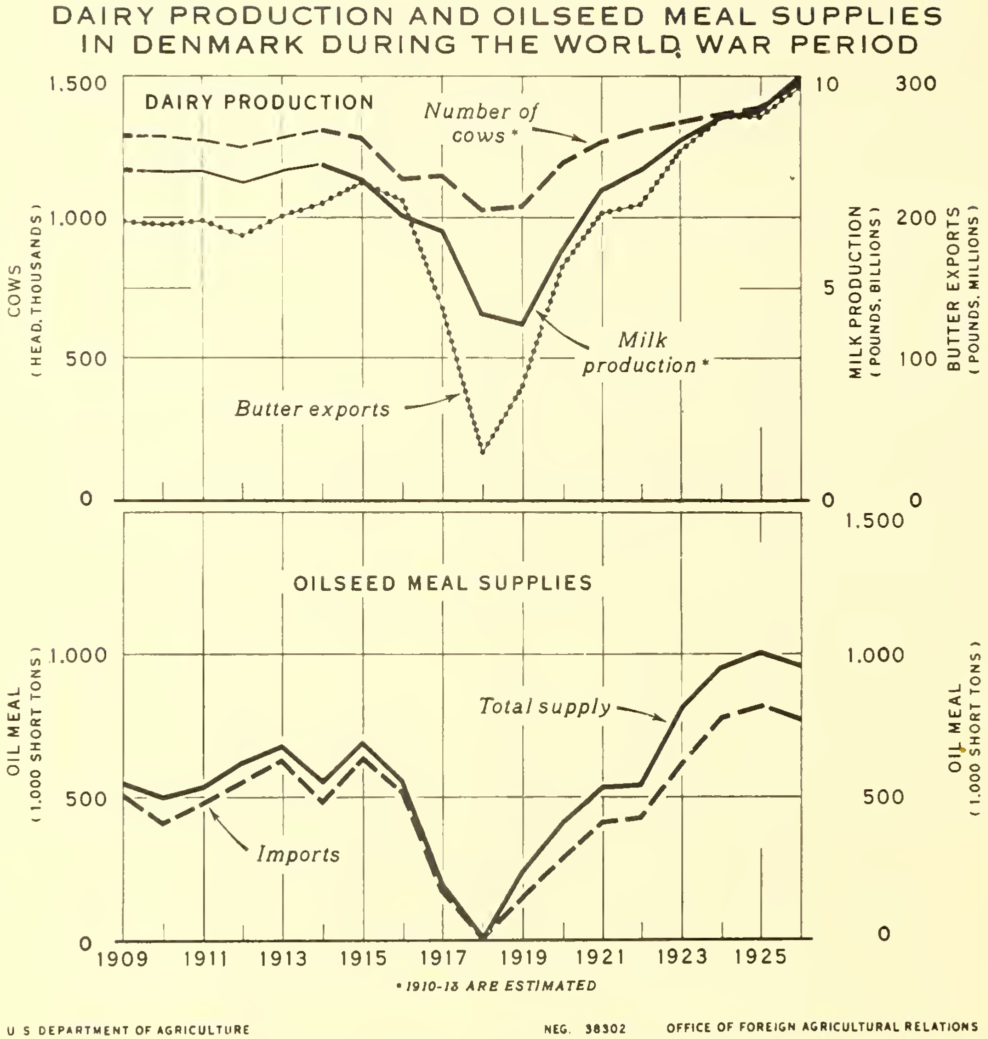
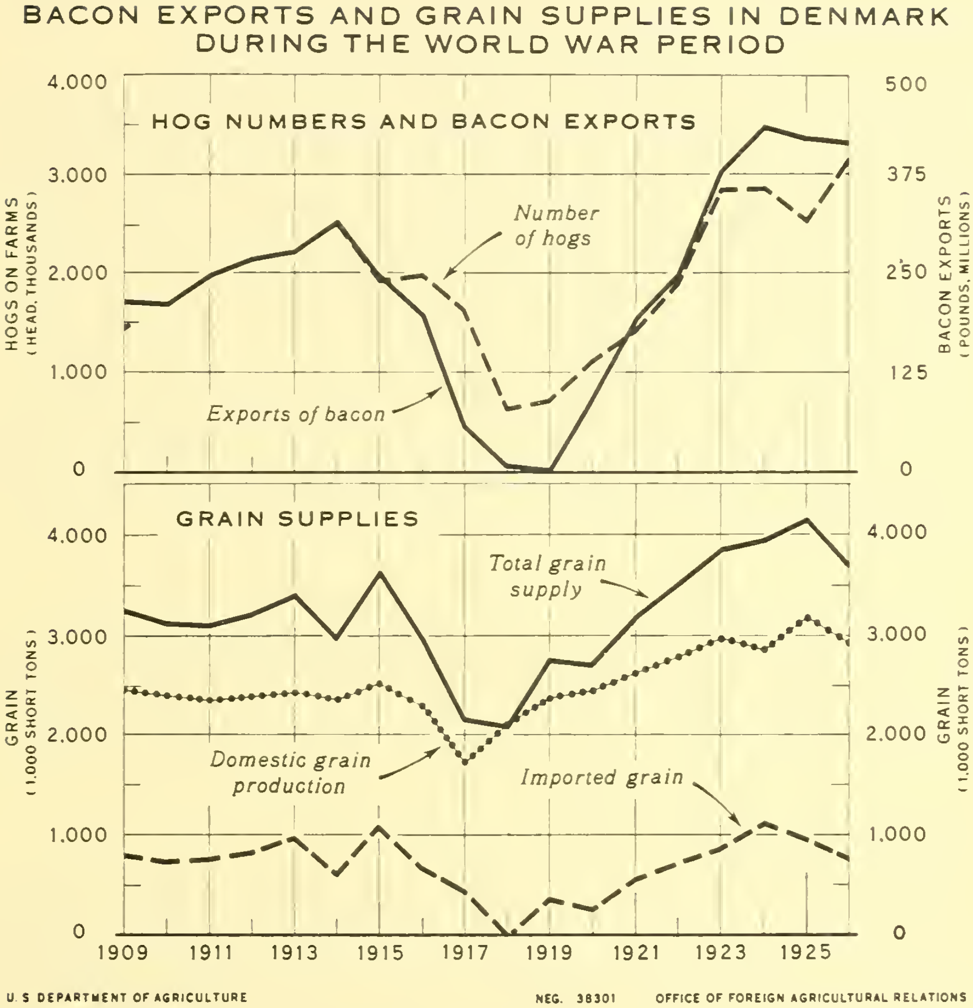


Figure 9.-Dairy production and oilseed meal supplies in Denmark during World War period.

Today the situation is much the same as in 1914. Milk production, butter exports, and oil meal consumption have each increased by slightly more than 50 percent, as has the consumption of margarine. Very little grain is fed to cattle in Denmark at any time, and oil meal is fed principally during the winter; therefore, milk production may be well maintained during the summer of 1940, while cattle are on pasture. Existing stocks of oilseeds and oil meal may carry production through part of the winter, after which time butter production and exports will depend largely upon new imports of oilseeds and meal and upon the imports of vegetable and whale oil for margarine. In the absence of such imports the surplus of butter for export may be reduced, possibly, to one-fourth of the 1939 level, unless domestic consumption is sharply curtailed through rationing.



BACON EXPORTS AND GRAIN SUPPLIES IN DENMARK DURING THE WORLD WAR PERIOD

U. S. DEPARTMENT OF AGRICULTURE NEG. 38301 OFFICE OF FOREIGN AGRICULTURAL RELATIONS

Figure 10.-Bacon exports and grain supplies in Denmark during World War period.

Hogs - During the World War hog numbers declined 75 percent from 2,497,000 in July 1914 to 621,000 in 1918 (see table 7). The number of hogs slaughtered in bacon factories declined from a normal of 55,000 to 60,000 per week in 1914 to 5,000 per week toward the end of 1918. Bacon exports declined from 313 million pounds in 1914 to 5 million in 1918, and to only 1 million in 1919. Not until 1923 did hog numbers and bacon exports regain the 1914 level.

After the outbreak of the World War, hog production continued for some time at a fairly high level, as a result of adequate supplies of grain and skim milk. Increased demand for pork resulted in heavier sales to Germany, which to some extent reduced hog numbers; not until 1917, however, did production begin to decline rapidly, because of a poor grain harvest and reduced imports. The necessity of conserving grain for food, together with the fact that skim milk supplies were reduced by more than 50 percent, made it necessary to reduce hog numbers further.

Today the situation differs principally in that a greater proportion of the feed grain is grown domestically. It is estimated that whereas in 1914 about 50 percent of the grain fed to hogs was imported, in 1938 only 30 percent of that fed was imported, and in 1939 only 15 percent. Therefore, if production could be maintained at the recent volume, and if it is not diverted to other uses, a decline of only 15 to 30 percent in the volume of pork production would necessarily result from cutting off grain imports. Crop prospects for 1940, however, are unfavorable, as a result of the unusually severe winter and late spring, which may necessitate further reduction in hog numbers. The hog industry relies heavily on skim milk - possibly to the extent of 25 percent of the total hog feed; therefore, any decline in milk production would further reduce pork production. It is estimated that during the World War skim milk supplies were reduced to about one-third of their former volume. Should this happen again, it might result in an additional 10 percent reduction in total pork production.

Another important consideration in the present situation is that the shift of the principal export market from the United Kingdom to Germany necessitates a shift in the type of product. Denmark's entire hog industry, especially with respect to type of hogs, is organized for the production of English-type bacon, whereas the German market requires a heavy type of hog and the production of fat pork.

FUTURE PRODUCTION DEPENDENT UPON GERMAN POLICY

The future trends in Danish production of both crops and livestock depend upon the policy adopted by the German Government. While Germany has adequate supplies of certain types of fertilizers, the shortage in other essential fertilizers points to the probability that crop yields in Denmark are more likely to decline than increase. This would be particularly true if livestock numbers were materially reduced. Furthermore, recent reports indicate that the severe winter and late spring are expected to reduce crop yields in 1940.

Of greatest importance, however, is Germany's policy in respect to Denmark's livestock industry. It is obvious that without control of the seas Germany cannot supply Denmark with the amount of feed necessary to maintain livestock production. Inability to supply concentrates is particularly serious. The obvious solution to this is a downward adjustment in livestock numbers to a level commensurate with domestic feed supplies. If part of Denmark's grain production were exported to Germany, a still greater reduction in hog numbers would be necessary. During the period of adjustment, of course, Germany will benefit from increased supplies of livestock and dairy products, but thereafter Denmark's ability to supply Germany with meats and dairy products will be severely curtailed. The rapidity with which livestock numbers will be reduced probably depends on whether Germany is counting on a long or a short war.

CONCLUSIONS

During the latter years of the World War Denmark's total supply of grain was reduced more than by one-third, and supplies of oil meal feed were cut off completely. As a result, exports of bacon were almost completely cut off, exports of butter were reduced to only 15 percent, and exports of eggs to 71 percent of normal. The status of present hostilities indicates that a similar situation may again develop - more rapidly, however, than during the World War. These conclusions are based on the assumptions (1) that the war will continue, (2) that Danish imports from other than European countries may be cut off as a result of the blockade, and (3) that existing supplies of feed and other raw materials will not be diverted or removed from Denmark, in which case production would be reduced much more sharply.

During the World War, sizeable imports continued to arrive for several years after war was declared. If the present blockade should result in an immediate cessation of imports, Danish production would decline much more rapidly than during the World War. Crop production would be affected only gradually, except for the present poor prospects for the 1940 crop. Livestock production, however, would be affected much more promptly, after the end of the pasture season and as soon as existing stocks of feed were consumed.

Grain supplies would be affected less severely than was the case during the World War, because a smaller proportion is now imported. The reduction in total grain supplies may amount to only about 10 to 20 percent, as compared with a reduction of 35 to 40 percent in 1917-1918. Supplies of oil meal and cake for cattle feed still depend entirely on imports and may again be entirely cut off. Supplies of phosphate rock for fertilizer must be imported, and may also be cut off. The effect of such a cessation of imports may be expected to reduce milk production by at least 30 percent, as a result of the lack of high-protein-concentrate feed, and to reduce butter exports by possibly 75 percent. This would occur as a result of the reduced milk production and larger domestic consumption of butter in place of margarine, which is normally made from imported vegetable and whale oil. Pork production, which depends primarily on supplies of grain and skim milk, would need to be reduced by only about 35 percent - less severely than during the World War. An immediate increase in slaughterings, however, to supply more meat for export and to conserve grain for exportation as food would reduce future pork production to an even greater extent.

Denmark supplied about 44 percent of total world exports of bacon and hams in 1938, and about 25 percent of all the butter and eggs; consequently, under normal conditions any considerable change in the volume of Danish production and exports would be expected to influence the world markets for these products. Under present conditions, however, any reduction in the volume of Danish exports may affect only the supplies available to Germany, and deficiencies may not in turn be replaced by imports from other countries.

If the 1939 export volume could be maintained, the diversion to Germany of former Danish exports to the United Kingdom would increase Germany's total butter imports to more than twice those in 1936, and would increase that country's total butter supplies by nearly 20 percent. Similarly, the additional bacon supplied by Denmark would increase Germany's 1936 total meat imports by 90 percent, but would increase total meat supplies by only 6 percent. Eggs from Denmark would increase imports by 70 percent and total supplies by 16 percent. Obviously, this volume of exports from Denmark cannot be maintained for long under present conditions.

The immediate cessation of Danish exports to the United Kingdom leaves a deficiency in supplies to that country which will be at least partly filled from other sources, but the extent to which this is true will depend upon the policy of the British Government, the extent to which consumption is reduced through import controls and rationing, and the extent of substitution by other products. The relative importance of Denmark as a supplier to the United Kingdom in 1938 is shown as follows:

IMPORTS FROM DENMARK	BUTTER	BACON AND HAM	TOTAL ALL MEAT	EGGS IN SHELL
	Percent	*Percent*	*Percent*	*Percent*
Percent of imports from all sources	25	46	12	35
Percent of total supplies, including domestic production	24	34	6	17

Denmark has supplied about one-fourth of the United Kingdom's butter requirements, and nearly half of the imported bacon and eggs. Bacon and hams constitute only about one-fifth of the country's total meat consumption; consequently, imports of bacon from Denmark accounted for only about 6 percent of the total meat supplies. Furthermore, bacon may be replaced to some extent by other kinds of meat. In replacing supplies the United Kingdom will, of course, give preference to Empire countries. Alternative supplies of bacon may be obtained from Canada, and of butter from Australia and New Zealand, but in the case of eggs, prospective increases in supplies from Ireland, China, and the Netherlands may not be adequate to maintain consumption at previous levels.

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RECENT DEVELOPMENTS
IN
FOREIGN AGRICULTURAL POLICY

SICILIAN COLONIZATION PROJECT

Considerable publicity in Italy and abroad has been given to a project of the Italian Government for the development of agriculture in Sicily and the improvement of living conditions of agricultural workers, according to a report received from American Consul Thomas McEnelly at Palermo. It is contemplated that the project will provide 20,000 farms and homes for rural workers within 10 years at a cost of some 2 billion lire ($100,000,000). On October 21, 1939, the project was inaugurated in Palermo by the Secretary of the Fascist Party, and work was begun on the first 2,000 units, which it was hoped would be completed within a year. The announced aim of the project is to put into cultivation about 1,235,500 acres of land, which are said to be suitable for cultivation but have been allowed to remain idle by the owners. Apparently this is to be accomplished by subdividing the large estates.

The Business and Financial Report of the Fascist Confederation of Industrialists for the month of August 1939, in commenting on the project, states that on July 20, 1939, "the Duce announced the Government's intention of finally breaking up the Sicilian latifundia, the name given to the vast estates in the interior of Sicily, on which the lack of water and of roads has been responsible for a system of extensive agriculture yielding poor and scanty crops cultivated by a poverty-stricken peasantry living in crowded, insanitary villages many miles from the fields they till." The result, it is believed, will be that "the standard of living of a population, which accounts for one-tenth of the nation, will be raised, new and important opportunities for work will be offered to the peasantry, and Sicilian agricultural production, now valued at some 2 billion lire per annum, will rapidly increase."

THE LATIFUNDIA

Sicily is an island of 9,860 square miles, or 6,310,400 acres. It has a population of 4,000,078 (1936 census). Ninety percent of the population dwell in cities and towns, despite the fact that fifty-five percent are engaged in agriculture. Extensive agriculture in the form of wheat raising and the growing of other field crops is carried on in the interior of the island, in connection with the *latifundia*, or large estates. Intensive agriculture and horticulture are found on the northeastern, northern, and western coasts, where there are comparatively small holdings. in the valleys, and the foothills of the mountain ranges that cover those sections of the island.

Of the 6,310,400 acres in Sicily, 5,191,571 are said to be under cultivation or suitable for cultivation. They are divided into 452,414 properties as follows:

Number of properties[1]	*Total number of acres*	*Average number of acres in each*
64	295,228	4,612
164	270,544	1,647
892	1,068,677	1,198
2 034	1,460,877	718
449.260	2,096,245	4.6
452,414	5,191,571	11.5

EXTENT OF LATIFUNDIA

The *latifundia* that are to be broken up are said to comprise about 26 percent of the arable land, as follows:[2]

Province	*Estates*	*Acreage*
Palermo	236	246,845
Messina	106	182,431
Caltanissetta	122	178,720
Catania	98	172,006
Enna	155	168,739
Agrigento	116	143,053
Siracusa	99	122,541
Trapani	107	103,067
Ragusa	16	18,663
	1,055	1,336,069

MANAGEMENT OF ESTATES

The large estates of Sicily are worked under a system that requires only a minimum effort on the part of the owner. He leases the agricultural rights to an individual *(gabbelloto)* at a fixed annual rate, who in turn hires agricultural laborers to farm the land. This system naturally leads to abuses, as a result of which the laborer is the principal sufferer. The owner pays very little attention to his estate so long as he receives his yearly rental. The *gabbelloto* hires his laborers at the lowest possible wages and requires arduous labor of them. Under the project now being put into effect, the owner rents a home to the laborer and shares the profits of the production of land in a proportion to be fixed by the Government. The *gabbelloto* is eliminated.[1]

EXECUTION OF PROJECT

The Government is starting work on the project at once. The large estates are being surveyed and divided into sections of 61.80 acres and the owners instructed to erect houses on each section according to specifications at an average cost of 45,000 lire ($2,250), half of which amount is to be paid by the Government and half by the owner. If the owner refuses to cooperate, the land is confiscated by the Government, which then stands the entire expense of the building. If the owner pleads lack of funds, a loan is granted him by the Government through the medium of the Banco di Sicilia at 7 percent interest.

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[1] Based on figures published in the *Business and Financial Report of the Fascist Confederation of Industrialists*, for the month of August 1939.

[2] Based on figures published by the *Giornale di Sicilia*, issue of August 4, 1939.

[3] No provision seems to have been made in the project for the management of the estates. It is quite certain that the owners are incapable, or at least unwilling to assume management. It is presumed, therefore, that a Government agent will occupy the position of the *gabbelloto*.

About 1,800 homes are now in process of construction, and it is hoped to complete the project in 5 years instead of 10, as originally contemplated.[4]

An entire building at Palermo is devoted to supervising the project, and a large staff of agriculturists, engineers, draftsmen, etc., is employed. Plaster models of estates as they will appear when the changes to be brought about are completed are on exhibition at present at the Teatro Massimo of Palermo. They show a great improvement in the living conditions of agricultural workers.

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[4] Statement of Premier Mussolini at a meeting of La Camera dei Fasci e delle Corporazioni, at Rome on March 4, 1940.

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FRANCE ESTABLISHES A MINISTRY OF SUPPLIES

A French Ministry of Supplies was established on March 21, 1940, when the present Cabinet under Premier Reynaud was formed. The decision to set up this Ministry resulted from the growing importance of problems relating to supplies for the army and the civilian population. From the beginning of the present war until the new Ministry was established, matters of supplies and provisioning were handled by the Ministry of Agriculture.

Two decrees of April 1, 1940, authorized the creation and described the functions of the Ministry of Supplies. The latter is charged with assuring supplies of agricultural products and foodstuffs for the army and the civilian population. Funds for this work will be provided either through direct appropriations or by transfer from Government agencies of funds to be used for purposes now falling within the scope of work of the Ministry of Supplies.

Provisioning services, agencies, and personnel heretofore attached to the Ministry of Agriculture will be transferred to the new agency. Specifically, the following Government services are transferred to the Ministry of Supplies from April 1, 1940, until the cessation of hostilities:

(1) The General Provisioning Service;

(2) The Military Service of lumber for war purposes and the General Direction of Waterways and Forests;

(3) The Military Service for Cereals.

The functions of the Ministry of Supplies are: (1) to exercise the authority attributed to the Ministry of Agriculture by the law of August 15, 1936, for the
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institution of a national interprofessional wheat office, except as regards the production and price-fixing of wheat; (2) to supply the civilian population and the army with foodstuffs, feedstuffs, and other agricultural products and to ensure their delivery to warehouses, manufacturing centers, administrative services, and naval warehouses; (3) to inspect and verify the condition and the use of supplies placed at the disposal of other ministries, without question of interference on the part of the Minister of Supplies with the functioning of these services; (4) to be constantly informed on the supply situation and the movement of stocks by authorizing the general inspectors of general provisioning services to have permanent access to the warehouses and administrative commissariats of the country; and (5) to fix prices for the purchase and sale of every kind of agricultural product and foodstuff necessary for the armed forces. Base prices of foodstuffs and other agricultural products not supplied by the General Provisioning Service may not be higher than the fixed rates.

Government ministries utilizing products supplied by the Ministry of Supplies must first consult the latter before making any decision regarding the foodstuffs regime of the troops, the amount of rations, or the rules governing their application.

The Minister of Supplies will also have under his direct authority: (1) the Foodstuffs Division of the Ministry of National Defense and of War, especially its functions for grouping, processing, and acceptance of foodstuffs and other agricultural products; (2) the General Foodstuffs Inspection Service, including the laboratories and various establishments attached thereto; (3) the regional and local services for general provisioning, as well as everything dealing with supplies and provisioning operations; and (4) the special transit services of general supplies in the ports.

The Minister of Supplies may change, by decree, the distribution of the work and the personnel among the services and organizations coming exclusively under his authority.

The members of the control corps of the army may be placed at the disposal of the Minister of Supplies by the Minister of National Defense and of War.

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